Arthur J. Gallagher & Co.
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August 20, 2015

Independent Operational Review of the Arizona State Retirement System's (ASRS) Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers

Submitted To:
Debra Davenport, Auditor General
Office of the Auditor General
State of Arizona
2910 North 44th Street Suite 410
Phoenix, Arizona 85018

Submitted By:
Gallagher Fiduciary Advisors, LLC
a subsidiary of Arthur J. Gallagher & Co.
3600 American Blvd W, Suite 500
Bloomington, MN 55431

DEBRA K. DAVENPORT, CPA
AUDITOR GENERAL

STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

MELANIE M. CHESNEY
DEPUTY AUDITOR GENERAL

August 20, 2015

Members of the Arizona Legislature

The Honorable Doug Ducey, Governor

Mr. Paul Matson, Director
Arizona State Retirement System

Transmitted herewith is an *Independent Operational Review of the Arizona State Retirement System's Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers*. This review was conducted by Gallagher Fiduciary Advisors, LLC, a subsidiary of Arthur J. Gallagher & Co., under contract with the Office of the Auditor General and as part of the sunset review process prescribed in Arizona Revised Statutes §41-2951 et seq.

As outlined in its response, the Arizona State Retirement System agrees with all of the findings and plans to implement or implement in a different manner all of the recommendations.

Sincerely,

Debbie Davenport
Auditor General

Attachment

cc: Arizona State Retirement System Board of Trustees

2910 NORTH 44th STREET • SUITE 410 • PHOENIX, ARIZONA 85018 • (602) 553-0333 • FAX (602) 553-0051

Arthur J. Gallagher & Co.

August 20, 2015

Ms. Debra Davenport
Auditor General
Arizona Office of the Auditor General
2910 North 44th Street Suite 410
Phoenix, Arizona 85018

Dear Ms. Davenport:

Gallagher Fiduciary Advisors, LLC (Gallagher) is pleased to submit our final report for the Independent Operational Review of the Arizona State Retirement System's (ASRS) Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers. This report was prescribed as part of the sunset review process in the Arizona Revised Statues §41-2951 et seq.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Mark Melnychuk | Area Vice President
Joseph Karpinski | Area Executive Vice President
Barbra Byington | Area Senior Vice President
Mangala Murphy | Area Assistant Vice President
Craig Morton | Area Assistant Vice President
Julianne Wenzlick | Client Relationship Consultant

Attachments

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Introduction

Project Scope

Arthur J. Gallagher & Co. (Gallagher) has been retained by the Office of the Auditor General (Office) for the State of Arizona to conduct performance audit work as part of the Office's performance audit and sunset review of the Arizona State Retirement System (the ASRS). The focus of Gallagher's work includes a review of the ASRS' investment strategies, alternative asset investment procedures, and fees paid to external investment managers. Gallagher has evaluated the ASRS in order to assess the efficiency and effectiveness of the ASRS operations and how well it meets its statutory responsibilities.

This report is presented in three sections: an executive summary; detailed discussion and analysis (Tasks I-III); and background information and methodology.

Section I, the Executive Summary, offers a high-level overview of the major themes in the report. The Executive Summary should be used in the context of the full report and not read in isolation or distributed separately from the full report.

Section II, Discussion and Analysis, comprises the body of the report and addresses each task area. The discussion and analysis sets forth detailed observed conditions and recommendations as well as relevant background information (including best practices where applicable). Within Section II, Gallagher has addressed the following three task areas, making recommendations for improvement and comparing current procedures to best practices, as appropriate.

> Task 1: Determine the ASRS plan's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance and make recommendations for improving the plan's investment performance, as appropriate.
> Task 2: Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments, identify the reasons for and impact of any inadequate controls and make recommendations for improving controls, as appropriate.
> Task 3: Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate.

Section III, Background and Methodology, provides information about Gallagher, the methodology used in performing this evaluation, the overall format of the report, and a summary of recommendations.

Section I: Executive Summary

Overall Conclusion

Gallagher has reviewed the ASRS as described in the scope of the current project. Overall, we found that the current practices and procedures are reasonably consistent with industry standards and generally in line with many best practices. Throughout this report, Gallagher makes recommendations to enhance and improve the performance of the investment assets (or the "Fund") as well as the ASRS' practices and procedures regarding alternative investment due diligence and fee negotiations.

Report Highlights and Key Findings

The following paragraphs summarize the highlights and key findings of our report.

Task 1: Determine the Fund's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance, and make recommendations for improving the Fund's investment performance, as appropriate.

- Overall Observations:
  - Gallagher analyzed the ASRS' investment performance over the past 10 fiscal years as compared to its investment objectives and peer funds. Additionally, we reviewed the processes in place to monitor its investment strategies and objectives and compared it to industry standards.
  - Over the 10 fiscal years analyzed, the Fund has surpassed its Policy Index[1] (7.5% vs. 7.2%), but lagged its 8% assumed actuarial interest rate[2]. However, over the rolling 20-year period ending June 30, 2014, the Fund outperformed the assumed actuarial interest rate (8.9% vs. 8.0%), which is the stated goal. In the body of the report, we review individual asset class performance and note specific areas of underperformance and possible reasons for that underperformance.
  - The Fund also ranks in the top quartile versus a universe of other public pension plans (16th percentile). It should be noted that total fund peer universe comparisons are not "apples to apples" since the asset allocation policy can vary dramatically from one plan to the next as plans have different investment objectives.
  - The ASRS has a well-diversified asset allocation and investment structure and investment staff follow a comprehensive performance monitoring policy.

- The ASRS Policy Observations:
  - The ASRS' main investment objectives are its 8% actuarial assumed interest rate and its strategic asset allocation policy ("SAAP") benchmark or Policy Index.

[1] *Policy Index*: Public market indices are weighted to create a Policy Index that matches the ASRS' asset allocation policy and the weights remain fixed until that asset allocation policy is changed, e.g., a fund with an asset allocation of 60% domestic equities and 40% domestic bonds might adopt a policy index of 60% Russell 3000 Index and 40% Barclays Aggregate Bond Index. Policy benchmarks serve as an objective measure of total fund performance.

[2] *Actuarial assumed interest rate:* As defined in the ASRS' Investment Policy Statement ("IPS"), the actuarial assumed interest rate "is essentially an estimate of the long-term average of the combination of expected inflation rates and expected real rates of return. The actuarial rate is also the discount rate used to calculate the present value of liabilities." Although the actuary certifies an investment return assumption annually, this is a long-term assumption and the objective outlined in the IPS is to meet or exceed this rate over rolling 20-year periods.

- The ASRS has a well-diversified asset allocation policy and uses a variety of investment strategies. The ASRS uses a mix of public and private market assets and does not appear overly concentrated in any one asset class or strategy. Diversification helps to reduce the risk – or volatility - of the total portfolio. Overall, the ASRS' investment strategies and asset allocation policy appear to be reasonable and in line with industry standards and peers.
- Similar to peer funds and in keeping with industry standards, the number and complexity of investment strategies utilized by the ASRS has increased over the last ten years to include emerging markets, private markets (e.g., private equity, private debt/credit), global tactical asset allocation ("GTAA"), and opportunistic investments (both debt and equity).

o <u>Recommendation:</u>

- The assumed actuarial interest rate has not changed over the last ten fiscal years; Gallagher recommends that the ASRS discuss the 8.0% actuarial rate annually with the actuary to ensure that it is appropriate given current asset allocation and projected rates of return. ASRS should maintain a long-term perspective to avoid unwarranted changes to the actuarial rate.

o <u>The ASRS Performance Observations:</u>

- The Fund met or exceeded the 8% actuarial assumed rate in seven out of the past ten fiscal years.
- On a rolling 20-year basis, the Fund met or exceeded the actuarial assumed rate in nine out of the past ten fiscal years.
- The Fund met or exceeded its Interim Policy Index[3] in eight out of the past ten fiscal years.
- The Fund's performance relative to the Interim Policy Index is attributable to decisions of under/overweighting certain asset classes, as well as through manager alpha (e.g., manager outperformance versus its benchmark).

Years ending 6/30:	Fiscal Year (FY) Return	Interim Policy Index	Did FY Meet Policy Index? (Y/N)	Actuarial Rate	Did FY Meet Actuarial Rate? (Y/N)	Rolling 20 Year Return	Did rolling 20 Meet Actuarial Rate? (Y/N)
2014	18.6%	17.8%	Y	8.0%	Y	8.9%	Y
2013	13.1%	12.6%	Y	8.0%	Y	8.0%	Y
2012	1.3%	1.3%	Y	8.0%	N	8.2%	Y
2011	24.6%	24.4%	Y	8.0%	Y	8.9%	Y
2010	14.8%	13.1%	Y	8.0%	Y	8.1%	Y
2009	(18.7%)	(19.1%)	Y	8.0%	N	7.8%	N
2008	(7.5%)	(5.7%)	N	8.0%	N	9.7%	Y
2007	17.7%	18.6%	N	8.0%	Y	10.3%	Y
2006	10.0%	8.8%	Y	8.0%	Y	10.0%	Y
2005	8.5%	7.8%	Y	8.0%	Y	11.0%	Y

[3] The Interim Policy Index adjusts the weights in the SAAP to private equity and real estate pro rata as these asset classes are funded over time. This is an industry standard practice.

- On a cumulative ten year basis, the Fund exceeded its Interim Policy Index (7.5% versus 7.2%), but lagged the 8% assumed actuarial rate.
- The Fund exceeded its Interim Policy Index over one, three, five, seven, ten, and twenty year periods ended June 30, 2014.

	One Year	Three Years	Five Years	Seven Years	Ten Years	Twenty Years
ASRS	18.55%	10.76%	14.22%	5.59%	7.46%	8.9%
Policy Index	17.83%	10.36%	13.59%	5.38%	7.21%	8.1%
Actuarial Rate	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%

- Recommendation:
  - The ASRS should continue to monitor performance of the Fund, including the underlying strategies and adjust its asset allocation by restructuring asset classes as appropriate and reasonable.

- The ASRS Underperformance Observations:
  - The large negative returns achieved in 2008-2009 had a significant impact on cumulative returns over seven and ten years, but recent strong bull markets have helped to lift overall returns.
  - Contribution rates have increased from 10.40% in Fiscal Year 2005 to 22.60% in Fiscal Year 2014 (includes employee and employer); however, this is only partly attributable to investment performance or underperformance as many other factors go into actuarial calculations.
  - The ASRS has maintained the necessary liquidity to pay benefits.
  - The ASRS has restructured the asset classes where the most significant underperformance was realized.

Task 2: Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments; identify the reasons for and impact of any inadequate controls and make recommendations for improving controls, as appropriate.

- Overall Observations:
  - Gallagher reviewed the processes and procedures that the ASRS has in place to evaluate and select alternative investment managers, generally defined as investments other than equities, fixed income, or cash. The ASRS procedures, outlined in the Strategic Investment Policy (SIP006), represent a thorough process that is consistent with many of the industry best practices, such as thorough due diligence and documentation, as well as the involvement of specialized and experienced alternative investment professionals (internal and external). To complete our review, Gallagher sampled 52 of the 146 individual partnerships that were a part of the ASRS' portfolio as of June 30, 2014. Sampling included requests for due diligence materials, such as internal reports and meeting minutes, and documents pertaining to each partnership, which were then compared against SIP006.

- Recommendations:
  - Review and update (as needed) all procedures and SIP006 annually, as a preventative measure that will force the ASRS to consider the official procedure and make it less likely that changes made to office practices are not captured in the Strategic Investment Policy.

  - Gallagher recommends including sourcing and screening information, such as emails or database screens, with the final due diligence materials for each partnership.
    - Potential Impact: The ASRS team, along with its external consultants (Meketa, Credit Suisse, Ennis Knupp & Associates, NEPC, Franklin Park, Townsend Group, Robert Charles Lesser & Co.), appear to have reasonable sourcing and screening procedures in place based on the information reviewed in this analysis. This has been incorporated into practice, and will allow ASRS to better evaluate its procedures for sourcing and screening investments. A clear record of where an investment idea originated and why the team chose to pursue the idea for additional due diligence may help focus future efforts, allowing the ASRS to concentrate on the most advantageous sources and the most clear characteristics that tend to lead to successful investments.

  - Gallagher recommends requiring each investment advisor to incorporate the due diligence checklist (as defined in Appendix 1 of SIP006) into its final memorandum.
    - Potential Impact: This practice provides a written record to demonstrate to both the Private Markets Committee and other interested parties that the due diligence on each partnership was conducted in a manner consistent with the written procedures and the manager has met expectations.

  - Gallagher recommends periodically reviewing each service provider (investment advisors and legal representation) to help ensure that the firms continue to serve in the best interest of the plan. We recommend that such a review be conducted at least every three years.
    - Potential Impact: Regular reviews of outside service providers can give the ASRS confidence that it continues to receive the highest quality advice and guidance at a competitive cost.

Task 3: Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate.

- Overall Observations:
  - While there are opportunities for improvement outlined in the recommendations of this report, Gallagher does not consider the current processes or other controls employed by the ASRS to be inadequate.
  - In order to evaluate the impact of any inadequate processes and controls, Gallagher has compared the ASRS' current investment manager fees with a third-party database (eVestment Alliance) that includes a peer universe fee calculation based on investment style and size.
  - While the majority of investments in traditional asset classes have secured favorable fee arrangements, several are above the median level for the asset class given the size of the mandate. This is further identified in the report. The investments with above median fee arrangements, do not necessarily indicate a failure of procedure, as long as fees were negotiated to the best of the team's ability and the assessment was made that the manager's potential to add value relative to its

benchmark was likely to justify the above-median expense. All managers with above-median fees, and at least three years of performance history, were outperforming their benchmark net of fees as of June 30, 2014.

- Recommendations:
  - While SIP006 indicates that terms (including fees/fee structure) should be part of screening and due diligence considerations, it does not explicitly outline a procedure for fee negotiation. The ASRS has a well-considered approach to negotiating investment fees, as described in response to Gallagher's request for information, which should be documented in an appendix to SIP006 that explicitly outlines the objectives and preferences for fee negotiations.

  - The documented procedures should include a standard method for documentation of fee negotiation. The documentation should include, at a minimum, the proposed fees from the manager before negotiation, the ASRS proposed fee structure, the final agreement, and be signed by the person(s) responsible for the negotiation. The documentation of fee negotiations should include acknowledgement of where the manager fee ranks compared to an appropriate peer group. Above-median fees should be justified by the perceived team's ability of the manager to add value over the appropriate benchmark.

  - The ASRS' procedures are well aligned with best practices with the exception of having a dedicated fee negotiation team that must report on all proposed investments before a deal is executed. Gallagher recommends creating such a group and implementing a formal report on fee negotiations to be completed prior to the execution of each investment agreement. Once established, this group can also be tasked with documenting procedures that include the best practices outlined by the Government Finance Officers Association (GFOA). The group should draft a formal report on fee negotiations to be completed prior to the execution of each investment agreement.

Section II: Discussion and Analysis

Task 1: Performance

Task 1: Determine the Fund's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance, and make recommendations for improving the Fund's investment performance, as appropriate.

a. Identify the ASRS' investment strategies and objectives, and expected rates of return for fiscal years 2005 through 2014;

- **Overall Observations**
  - The ASRS' main investment objectives are its 8% actuarial assumed interest rate[4] and its strategic asset allocation policy ("SAAP") benchmark or Policy Index[5]. Public market indices are weighted to create a Policy Index that matches the ASRS' asset allocation policy and the weights remain fixed until that asset allocation policy is changed.
  - The ASRS has a well-diversified asset allocation policy and uses a variety of investment strategies. The ASRS uses a mix of public and private market assets and does not appear overly concentrated in any one asset class or strategy. Diversification helps to reduce the risk – or volatility - of the total portfolio.

- **Observations**

  Overall Fund Investment Objectives and Expected Rates of Return 2005-2014
  - The ASRS has a total fund level Investment Policy Statement ("IPS"). The first IPS was approved by the Board on February 18, 2011, and then later revised on November 16, 2011 and August 23, 2013.
  - Prior to 2011, the ASRS did not have an IPS in place.
  - The IPS defines the Performance Objectives for the Fund. The four Objectives shown below, for 2014, have been documented in the IPS since February 18, 2011 and are also spelled out in NEPC's (ASRS' general investment consultant) annual independent report for Fiscal Year ended June 20, 2014:

[4] *Actuarial assumed interest rate:* As defined in the ASRS' Investment Policy Statement ("IPS"), the actuarial assumed interest rate "is essentially an estimate of the long-term average of the combination of expected inflation rates and expected real rates of return. The actuarial rate is also the discount rate used to calculate the present value of liabilities." Although the actuary certifies an investment return assumption annually, this is a long-term assumption and the objective outlined in the IPS is to meet or exceed this rate over rolling 20-year periods.

[5] *Policy Index*: Public market indices are weighted to create a Policy Index that matches the ASRS' asset allocation policy and the weights remain fixed until that asset allocation policy is changed, e.g., a fund with an asset allocation of 60% domestic equities and 40% domestic bonds might adopt a policy index of 60% Russell 3000 Index and 40% Barclays Aggregate Bond Index. Policy benchmarks serve as an objective measure of total fund performance.

Objective	Description
Objective #1:	Achieve a twenty-year rolling annual total fund net rate of return equal to or greater than the actuarial assumed interest rate (Actuarial rate of 8%)
Objective #2:	Achieve one-year and three-year rolling annual total fund net rates of return equal to or greater than the return of the ASRS Strategic Asset Allocation Policy (SAAP) Benchmark (Policy Index)

SAAP: 7/1/2012 to Present	
23%	Standard & Poor's (S&P) 500
5%	S&P MidCap 400
5%	S&P 600
14%	Morgan Stanley Capital International (MSCI) Europe, Australasia, and Far East (EAFE) (Net)
3%	MSCI EAFE Small Cap (Net)
6%	MSCI Emerging Markets (Net)
7%	Russell 2000 1 Quarter Lagged
13%	Barclays Aggregate Index
5%	Barclays U.S. High Yield Index
4%	JP Morgan Government Bond Index –Emerging Markets (GBI-EM) Global Diversified
3%	S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)
8%	National Council of Real Estate Fiduciaries (NCREIF) Open End Diversified Core (ODCE) 1 quarter Lagged (net)
4%	Dow Jones (DJ) UBS Commodities Index

Objective	Description
Objective #3:	Achieve one-year and three-year rolling annual total fund net rates of return for the ASRS strategic asset classes that are equal to or greater than their respective strategic asset class benchmarks (Asset class benchmarks)
Objective #4:	Ensure sufficient monies are available to meet pension benefits, health insurance, member refunds, administrative payments, and other cash flow requirements. (liquidity)

- Between February 18, 2011 and August 23, 2013 there were two objectives in addition to the ones stated above:

Objective	Description
Objective #5:	Achieve a total fund rate of return equal to or greater than the amount projected in the most recent asset allocation study.
Objective #6:	Achieve portfolio-level net rates of return equal to or greater than their respective portfolio benchmarks.

- The SAAP has evolved over the years as changes have been made to the asset allocation policy:

Historic Strategic Asset Allocation Policy (SAAP)				
11/1/09-6/30/12	**1/1/07 – 10/31/09**	**10/01/05 – 12/31/06**	**10/1/03 – 10/1/05**	**Index**
28%	31%	53%	53%	S&P 500 Index
6%	7%			S&P MidCap 400
6%	7%			S&P 600

11/1/09-6/30/12	1/1/07 – 10/31/09	10/01/05 – 12/31/06	10/1/03 – 10/1/05	Index
	18%	15%		MSCI All Country World Index ex-US
13%			15%	MSCI EAFE (Gross through 12/31/13 then Net, blended not restated)
2%				MSCI EAFE Small Cap (Gross through 12/31/13 then Net, blended not restated)
3%				MSCI Emerging Markets (Gross through 12/31/13 then Net, blended not restated)
7%	5%			Russell 2000 1 quarter Lagged
24%	26%	26%	26%	Barclays Aggregate Index
2%				Barclays High Yield Index
6%	6%	6%	6%	NCREIF ODCE 1 quarter Lagged (net)
3%				Dow Jones UBS Commodities Index

- The table below illustrates the objectives that were in place over the past ten fiscal years.

Investment Policy Statement Objectives				
Fiscal Year 6/30	**Objective #1:** 20-year rolling 8% Actuarial Rate	**Objective #2:** Total Fund 1 & 3 years v. SAAP Benchmark	**Objective #3:** Asset classes 1 & 3 years v. benchmarks	**Objective #4:** Liquidity
2014	X	X	X	X
2013	X	New SAAP 7/1/2012	X	X

Fiscal Year 6/30	Objective #1: 8% Actuarial Rate	Objective #2: Total Fund v. SAAP Benchmark	Objective #3: Achieve return projected in asset allocation study (Eliminated 8/23/2013)	Objective #4: Asset classes v. benchmarks	Objective #5: Portfolio respective benchmarks (Eliminated 8/23/2013)	Objective #6: Liquidity
2012	X	X	X	X	X	X
2011	X	X	X	X	X	X
2010	X	New SAAP 11/1/2009	X	X	X	X
2009	X	X	X	X	X	X
2008	X	X	X	X	X	X

Fiscal Year 6/30	Objective #1: 8% Actuarial Rate	Objective #2: Total Fund v. SAAP Benchmark	Objective #3: Achieve return projected in asset allocation study (Eliminated 8/23/2013)	Objective #4: Asset classes v. benchmarks	Objective #5: Portfolio respective benchmarks (Eliminated 8/23/2013)	Objective #6: Liquidity
2007	X	New SAAP 1/1/2007	X	X	X	X
2006	X	X	X	X	X	X

Investment Policy Statement Objectives- Continued					
Fiscal Year 6/30	Objective #1: Safety as Principal Consideration	Objective #2: 8% Actuarial Rate	Objective #3: Minimum Funded Status of 100%	Objective #4: Support Excess Earnings PBI	Objective #5: Maintain Relatively Stable Contribution Rate
2005	X	X	X	X	X

Investment Strategies Utilized 2005-2014[6]

- The number and complexity of investment strategies utilized by the ASRS has increased over the last ten years.
- Summary of observations for the fiscal year 2014 Investment Strategies and history for each asset class are:

<table>
<tr><th>Investment Strategy</th><th>Topic</th><th>Observations</th></tr>
<tr><td rowspan="2">Domestic Equity</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 12/31/06</td><td>100% S&P 500</td></tr><tr><td>01/01/07-12/31/10</td><td>74% S&P 500, 13% S&P 400, 13% S&P 600</td></tr><tr><td>01/01/11-Present</td><td>70% S&P 500, 15% S&P 400, and 15% S&P 600</td></tr></table></td></tr>
<tr><td>Passive Management</td><td>▪ The majority of the domestic equity portfolio is passively managed
o Approximately 83% of the large cap portfolio
o Approximately 66% of the mid cap portfolio
o Approximately 34% of the small cap portfolio</td></tr>
</table>

[6] The ASRS Investment Performance Report for the period ending June 30, 2014 dated August 18, 2014, prepared by NEPC.

<table>
<tr><th>Investment Strategy</th><th>Topic</th><th>Observations</th></tr>
<tr><td rowspan="2">International Equity</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 12/31/05</td><td>100% MSCI EAFE</td></tr><tr><td>01/01/06-12/31/10</td><td>100% MSCI ACWI ex-US</td></tr><tr><td>01/01/11-06/30/12</td><td>72% MSCI EAFE, 11% MSCI EAFE Small Cap and 17% MSCI Emerging Markets</td></tr><tr><td>07/01/12-Present</td><td>61% MSCI EAFE, 13% MSCI EAFE Small Cap and 26% MSCI Emerging Markets</td></tr></table></td></tr>
<tr><td>Passive Management</td><td>▪ Over half of the international developed markets portfolio is passively managed (54%)
o Almost 60% of the large cap portfolio is passively managed
o Approximately 37% of the small cap portfolio is passively managed
▪ Approximately 34% of the emerging markets equity portfolio is passively managed</td></tr>
<tr><td rowspan="2">Public Markets Fixed Income</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 12/31/10</td><td>100% BC US Aggregate Index</td></tr><tr><td>01/01/11-12/31/12</td><td>93% BC US Aggregate Index, 7% BC US HY Bond Index</td></tr><tr><td>01/01/13-Present</td><td>59% BC US Aggregate Index, 23% BC US HY Bond Index, 18% JP Morgan GBI-EM Global Diversified</td></tr></table></td></tr>
<tr><td>Passive Management</td><td>▪ The core portion of the public markets fixed income portfolio is managed primarily through enhanced passive strategies</td></tr>
<tr><td>Private Debt</td><td>Benchmark</td><td>▪ S&P/LSTA Levered Loan Index + 250 bps (funded in 2012)</td></tr>
<tr><td>Opportunistic Debt</td><td>Benchmark</td><td>▪ Net absolute return expectations range from 10-14% annually (inception date 1/2008). These investments are tactical in nature.</td></tr>
<tr><td>Inflation-Linked</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 7/31/10</td><td>100% BC US TIPS</td></tr><tr><td>08/01/10-08/31/10</td><td>50% BC US TIPS, 50% DJ UBS Commodities Index</td></tr><tr><td>09/01/10-05/31/11</td><td>30% BC US TIPS, 70% DJ UBS Commodities Index</td></tr><tr><td>06/01/11-Present</td><td>100% DJ UBS Commodities Index</td></tr></table></td></tr>
</table>

<table>
<tr><th>Investment Strategy</th><th>Topic</th><th>Observations</th></tr>
<tr><td></td><td>Notes</td><td>▪ The ASRS started out with a dedicated TIPS (Treasury Inflation-Protected Securities) allocation for its inflation-linked portfolio, but over the years has moved to a commodities strategy.
▪ The ASRS previously used two active managers in this space, funded September 2010, but is now invested with one manager.
▪ Real estate, farmland and timber are considered extensions of the Inflation-linked program and addressed in the same annual asset class review.
▪ The ASRS has also made a commitment to an infrastructure fund, but no capital has been called to date.</td></tr>
<tr><td rowspan="2">Real Estate</td><td>Benchmark</td><td>▪ NCREIF– ODCE Index (Inception date 10/2005)</td></tr>
<tr><td>Notes</td><td>▪ The current portfolio is below the target of 8%, but the ASRS has developed a pacing plan to meet that target over time.
▪ The real estate portfolio is broken out into Core (Private and Public), Non-Core (Enhanced Return, High Return and Separately Managed), and the Arizona Owned Assets.</td></tr>
<tr><td rowspan="2">Farmland and Timber</td><td>Benchmark</td><td>▪ CPI ex-Food and Energy + 350 bps (inception date 9/2013)</td></tr>
<tr><td>Notes</td><td>▪ The ASRS has made one Farmland investment to date in 2013.
▪ No investments in Timber have been made to date.</td></tr>
<tr><td rowspan="2">Global Tactical Asset Allocation (“GTAA”)</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 09/30/11</td><td>56% S&P 500, 16% MSCI EAFE, 28% BC Aggregate</td></tr><tr><td>10/01/11-06/30/12</td><td>50% S&P 500, 19% MSCI EAFE, 28% BC Aggregate and 3% DJ UBS Commodities Index</td></tr><tr><td>07/01/12-Present</td><td>43% S&P 500, 25% MSCI EAFE, 28% BC Aggregate and 4% DJ UBS Commodities Index</td></tr></table></td></tr>
<tr><td>Notes</td><td>▪ The ASRS has had a tactical asset allocation program in place since 1984 and moved to GTAA in 2003.
▪ ASRS currently uses two GTAA managers and prefers this approach over hedge fund structures.</td></tr>
<tr><td rowspan="2">Private Equity</td><td>Benchmark</td><td>▪ Russell 2000 Index</td></tr>
<tr><td>Notes</td><td>▪ The ASRS began investing in Private Equity in 2007.
▪ The current portfolio is below the target of 7%, but ASRS has developed a pacing plan to meet that target over time.
▪ The portfolio is invested in buyouts, technology, distressed, energy, secondaries, mezzanine, and venture capital funds.</td></tr>
<tr><td>Opportunistic Equity</td><td>Benchmark</td><td>▪ Net absolute return expectations range from 10-14% annually (funded in 2011)</td></tr>
</table>

Investment Strategy	Topic	Observations
	Notes	▪ Private market opportunistic equity investments with a target of 0-3%, each investment would have its own absolute return expectation. These investments are tactical in nature.

- **Recommendations-** Not Applicable

b. Compare the ASRS' investment strategies and objectives to best practices, including but not limited to industry standards;

- **Background Summary of Best Practices**

Investment Strategies and Objectives Best Practices/Industry Standards

Investment Policy Statement

- It is best practice/industry standard for a retirement system to establish and document appropriate investment strategies and objectives for the pension fund in the Investment Policy Statement ("IPS").
- An IPS is an industry standard foundational document for a pension fund's investment program.
  1. Purpose of an IPS: One purpose of an IPS is to articulate the consensus view of the Board of Trustees regarding the overall investment program and to document policies and procedures. The document can contain information including:
     a) The fund's investment objectives;
     b) The fund's risk tolerance, including liquidity needs;
     c) The asset allocation policy;
     d) Broad system and asset class level investment guidelines that define the allowable asset classes/investment strategies;
     e) Standards and measures of investment performance (i.e., the objectives for each asset class and the overall system).
  2. Definition of Performance Standards: Standards and measures of investment performance include performance benchmarks, which are objective standards used to assist in evaluating pension fund investment performance. A good benchmark should have the following characteristics:
     a) act as a representative opportunity set;
     b) be transparent;
     c) be objective;
     d) be exhaustive;
     e) be composed of investable securities or assets.

Benchmarks:

- Institutional investors typically use at least two types of performance benchmarks: "policy" benchmarks and "strategic" benchmarks.
  1. Policy Benchmarks: Policy benchmarks should represent the broad asset class and are used as a reference point against which the investor can compare its total asset class returns. Published market indices are weighted to create a Policy Index that matches the Fund's

long-term target asset allocation and the weights remain fixed over time. The Policy Index serves as an objective measure of total fund performance.

a) Example: A fund with an asset allocation of 60% domestic stocks and 40% domestic bonds may adopt a policy index of 60% Russell 3000 Index and 40% Barclays Aggregate Bond Index.

b) Policy benchmarks also help define the types of investment managers that should be used to achieve the investment objectives for the asset class and the nature of the manager's investment mandate.

2. Strategic Benchmarks: Strategic benchmarks are generally more narrowly defined and typically focus on a particular investment "style" within the asset class. They more clearly describe the expected range of investment opportunities for a given manager and more objectively measure the manager's value added, or the manager's return independent of its investment style.

- Providing appropriate benchmarks for investors is essential for them to make informed investment decisions and to evaluate performance. The risk of using an inappropriate benchmark is that the investor may not receive an accurate and appropriate measurement with which to compare its investment performance and/or volatility.

o **Overall Observations**

- Overall, the ASRS' investment strategies and asset allocation policy appear to be reasonable and in line with industry standards and peers.
- Similar to peer funds and in keeping with industry standards, the number and complexity of investment strategies utilized by the ASRS has increased over the last ten years to include emerging markets, private markets (e.g., private equity, private debt/credit), GTAA, and opportunistic investments (both debt and equity).

o **Observations**

- Investment Policy Statement: As stated above, the ASRS has a total fund IPS in place since February 2011, in which the Performance Objectives are defined. It is unusual for a Fund of this caliber not to have an IPS in place; however, as noted, this situation has been rectified since 2011.
- Actuarial Rate of Return: It is best practice/industry standard for one of the objectives outlined within the IPS to be the assumed actuarial rate. The ASRS has an assumed actuarial rate within their IPS.
  - The 2014 NCPERS Public Retirement Systems Study reports an average investment assumption of 7.7%, up 0.1% from 2013.
  - The ASRS' assumed actuarial rate is 8.00%. This assumption is slightly above the survey average.
  - The ASRS' actuarial assumed rate of return has remained unchanged over the ten years analyzed.
  - Milliman prepares an annual corporate Pension Funding Study of 100 companies[7]. The average expected rate of return for 2013 was 7.4%.
  - Many pension funds – both public and private – have lowered their actuarial assumed rate of return in recent years.
    - o Per the Milliman study, the average expected rate of return has dropped from 9.4% in 2000 to 8.0% in 2010 to 7.8% for 2011 to 7.5% for 2012.

[7] Milliman 2014 Pension Funding Study; John W. Ehrhardt, Zorast Wadia, Alan Perry; April 2014.

- Many corporate plans have moved towards LDI (Liability Driven Investment) strategies and have lowered their equity allocations (and increased their fixed income allocations). With the change towards LDI strategies, Gallagher expects the assumed rates of return to continue to decrease.
- Additionally, a lower actuarial rate would have a negative impact on the funding ratio.

- Previous IPS Objective: As mentioned above, the ASRS eliminated two total Fund objectives from its IPS that were in place from February 18, 2011 to August 23, 2012. Gallagher would agree that these two objectives are less appropriate and are not typically found in other industry Investment Policy Statements.

Objective	Description
Objective #5:	Achieve a total fund rate of return equal to or greater than the amount projected in the most recent asset allocation study.
Objective #6:	Achieve portfolio-level net rates of return equal to or greater than their respective portfolio benchmarks.

- Policy Benchmark: In accordance with best practice/industry standards, the ASRS has a policy index (the SAAP) as a benchmark for the total fund. The SAAP appears to be in line with the current asset allocation policy.
- Strategic Benchmark: In accordance with best practice/industry standards, the ASRS has a strategic benchmark for each asset class.
  - Gallagher has reviewed the benchmarks for each asset class listed above in Section 1.a. and found them to be reasonable benchmarks and in line with industry standards.
  - For certain types of investments, e.g., private equity, timber/farmland, it is not possible to use an “investable” benchmark (e.g., the S&P 500 where one could buy all 500 stocks) as an objective and it is an industry standard to use a target rate of return instead (e.g., LIBOR + xx% or CPI + xx %)
- Asset Classes: As stated above, the number and complexity of investment strategies (i.e., asset classes) has increased over the period under review.
  - The ASRS has kept pace with peers by diversifying its asset allocation and expanding the number of investment strategies. We have found this to be the case for most institutional pension funds:
    - Investments beyond domestic equity, developed markets international equity and core fixed income have become commonplace or industry standard.
    - These include emerging markets equity, private markets investments (equity and debt), private real estate, increased inflation protection/real asset strategies, etc.
    - Greenwich Associates 2013 survey[8] (noted below) remarks, “Public funds are responding to funding shortfalls by significantly increasing allocations to alternative investments, with notable increases this year to private equity.

[8] Greenwich Associates; 2013 United States Institutional Investors; Institutional Asset Allocation. December 2013.

Investment Strategy	Observations
Domestic Equity	o For a plan the size of the ASRS, passively managing a large percentage of the portfolio is not uncommon since it is difficult to achieve manager alpha in this asset class, especially in large cap equity, and passive management is much less expensive. o Per Greenwich survey, U.S. public funds manage an average of 42% of U.S. equity passively.
International Equity	o For a plan the size of the ASRS, passively managing a large percentage of the portfolio is not uncommon, but it is less widely used than passive management of domestic equity, especially for emerging markets. o As noted below, the ASRS has had some difficulties in selecting active international equity managers, so managing a significant portion passively is a sound move. o Per Greenwich survey, U.S. public funds manage an average of 19% of international equity passively.
Fixed Income	o Passive (or enhanced passive) management of fixed income is generally less common than for equities, but can still be an efficient way to manage a large core portfolio. Since many fixed income managers have latitude to go outside the core Barclays Aggregate Index benchmark, active management can add more value. o We understand that the ASRS is currently underweighting core fixed income due to its current low yield characteristics. o The addition of high yield and global bond strategies was a reasonable move by ASRS and in line with industry trends. o The ASRS has Private Debt/Opportunistic Debt investments outside the public markets fixed income: • This has been a newer investment area as a dedicated strategy in line with industry trends as investors seek higher yielding fixed income investments.
Inflation-Linked	o While investment in these types of assets is not universal, it is widely accepted in the industry. o TIPS are widely used for inflation protection, although they are no longer part of ASRS' strategy.
Real Estate	o Private real estate investment is very common by large institutional investors. o The real estate portfolio is broken out into Core (Private and Public), Non-Core (Enhanced Return, High Return and Separately Managed). o This type of asset mix is common with a private real estate portfolio. o The ASRS also has a portfolio of Arizona Owned Assets. o It is not uncommon for very large pension funds to own some real estate directly.
Farmland and Timber	o Investments in Farmland/Timber are less common, but not unusual for very large institutional investors as they attempt to diversify their portfolio.
GTAA	o The ASRS does not have exposure to hedge funds, either directly or through fund-of-funds. Exposure to hedge funds is fairly common for large institutional investors, but the ASRS stated they prefer the GTAA approach over hedge fund structures.

Investment Strategy	Observations
Private Equity	o Investments in private equity have historically been considered "alternatives", but it is very standard for large institutional investors to invest in this asset class. o The ASRS has less emphasis in some common areas, such as venture capital, but the portfolio appears diversified by strategy and vintage year.
Opportunistic Equity	o This has been a newer investment area in line with industry trends as investors seek higher yielding private markets investments outside the traditional realm of "private equity."

- The ASRS has a well-diversified asset allocation and uses a variety of investment strategies. In the table below, we compare the ASRS' Target and Interim SAAP asset allocation to survey data: Greenwich Associates and NCPERS (National Conference on Public Employee Retirement Systems)[9].
  - US Equity Allocation
    - ASRS' US Equity allocation is in line with NCPERS and above the Greenwich average.
    - Per Greenwich survey, the average amount allocated to US Equity by public funds has decreased from 45% in 2004 to 25% in 2013.
  - International Equity Allocation
    - ASRS' International Equity allocation is close to the Greenwich average, but higher than the NCPERS survey.
    - Per Greenwich survey, in contrast to domestic equity, the amount allocated to International Equity by public funds has increased since 2004 from an average of 16% to 22%.
  - Private Equity
    - ASRS' Private Equity target allocation is slightly below Greenwich and NCPERS.
    - Per Greenwich survey, the amount allocated to private equity by public funds has increased from 4% in 2004 to 10% in 2013.
  - US Fixed Income
    - ASRS' US Fixed Income target allocation is slightly below NCPERS and below Greenwich; however, when the Emerging Markets Debt and Private Debt are added the target for total fixed income is 25%.
    - Per Greenwich survey, the average amount allocated to fixed income has decreased slightly from 28% in 2004 to 25% in 2013.
  - Real Estate Equity
    - ASRS' Real Estate Equity target allocation is the same as peers represented in the surveys.
  - Inflation Protected Strategies
    - The ASRS has a 4% target allocation to Inflation protected strategies, which is not represented separately in the Greenwich survey, but is larger than the 1% NCPERS survey target.
  - Hedge Funds/Fund of Funds
    - The ASRS does not have a target allocation to hedge funds or fund-of-funds, which make up 3% in the Greenwich survey.

[9] 2014 NCPERS Public Retirement Systems Study. November 2014.

  - It is not possible to do a fully detailed comparison given the rather large allocation to "other" in the two surveys.

- Overall, the ASRS' investment strategies and overall asset allocation appear to be reasonable and in line with industry standards and peers.

Asset Class	ASRS Target Allocation	ASRS Interim SAAP	2013 Greenwich Public Funds Survey	2014 NCPERS Survey Target Allocation
US Equity	**33%**	**35%**	**25%**	**32%**
- large cap	23%	25%	-	-
- mid cap	5%	5%	-	-
- small cap	5%	5%	-	-
International Equity	**23%**	**23%**	**22%**	**19%**
- developed	14%	14%	-	-
- developed small cap	3%	3%	-	-
- emerging	6%	6%	-	-
Private Equity	**7%**	**6%**	**10%**	**9%****
US Fixed Income	**18%**	**19%**	**25%**	**19%**
- core bonds	13%	14%	-	-
- high yield bonds	5%	5%	-	2%
Emerging Markets Debt	**4%**	**4%**	**NA**	**3%**
Private debt	**3%**	**3%**	**NA**	**NA**
Real estate	**8%**	**6%**	**8%**	**8%**
Inflation Protection/ Commodities	**4%**	**4%**	**NA**	**1%**
Hedge Funds	**-**	**-**	**3%**	**NA**
Other	**-**	**-**	**7%***	**9%*****

*Other assets includes multi-asset, commodities, and money market.
**Includes private equity, hedge funds, and other alternatives.
***Includes 1% cash and variety of other responses.

Recommendations

Task 1.b: Compare the ASRS' investment strategies and objectives to best practice, including but not limited to industry standards
Recommendation: 1. The ASRS should continue to maintain and update an investment policy statement (IPS) for the Fund. 2. The assumed actuarial interest rate has not changed over the last ten fiscal years; Gallagher recommends that the ASRS discuss the 8.0% actuarial rate annually with the actuary to ensure that it is appropriate given current asset allocation and projected rates of return. ASRS should maintain a long-term perspective to avoid unwarranted changes to the actuarial rate.

c. Determine the processes the ASRS uses to monitor how well its investment strategies and objectives are performing and guide it toward meeting its expected rates of return;

- Overall, the ASRS uses a comprehensive set of processes and reports to monitor the performance of the Fund and determine whether it is performing in accordance with its investment objectives.

- **Observations**

  - ASRS Strategic Investment Policy ("SIP006") - Investment Manager, Partner, and Co-Investment Selection and Oversight documents the selection and oversight process.
    1. SIP006 states, "Public and private investment managers and co-investments are monitored by various functions performed by the CIO, Investment Management Division (IMD) staff, ASRS custody bank, general consultant, staff extension consultants, and other service providers; and reported to the Asset Class Committees, Investment Committee (IC), and Board."
    2. IMD staff does not use a formal "watch-list." IMD staff indicated that in lieu of a watch-list, they prefer a more "dynamic approach" where managers are under "continuous review."
  - Quarterly Portfolio and Investment Manager Reviews: The ASRS reports that IMD staff conduct quarterly due diligence reviews with all investment managers.
    1. The objectives of the Reviews are "to review performance, attribution, and consistency of process and decision-making, and other matters related to firm personnel, Assets Under Management (AUM), and operations."
    2. Quarterly reviews are held either via conference call or in person.
    3. Attendees at reviews include IMD asset class staff and Senior Portfolio Managers, Analysts and Account Managers from the investment manager.
  - Open Communication: IMD staff have open communication with all investment managers that is not limited to quarterly reviews if necessary, e.g., concerns about performance or organizational changes at the firm.
    1. IMD staff can request input from Generalist or Specialty Consultants, as needed.
    2. Any noteworthy issues are reported to the CIO.
  - Internal Audit: The internal audit department reviews and reports any issues from the Monthly Compliance Report from State Street. The Monthly Compliance Report is a rules based report created by State Street based on individual portfolio guidelines.
  - The ASRS utilizes the following reports in its performance reporting/monitoring process:

Report Frequency	Report Information
Daily	▪ Preliminary unofficial daily performance available for total fund, asset classes and portfolios from custody bank. ▪ All portfolios are listed, but daily data is only available for assets that can be priced daily, e.g., this does not apply to asset classes such as private equity or real estate.

Report Frequency	Report Information
Weekly	▪ Weekly "Market Info Report" prepared by IMD staff with performance calculated by State Street and benchmark/index performance from Bloomberg. o Report includes total fund and relevant index performance for fiscal and calendar YTD. o Presented to CIO and Director weekly and monthly to the Investment Committee (IC) at their meetings.
Monthly	▪ Final unofficial public markets portfolio performance as calculated by State Street. o Report contains manager level performance versus benchmarks for public market asset classes. o This report goes to the CIO, Director, IC, and Board during regularly scheduled IC and Board meetings as part of the CIO's report.
Quarterly	▪ ASRS' general consultant (NEPC) prepares two reports quarterly: The Investment Performance Report (IPR) and the Independent ASRS Investment Program Oversight Report ("Oversight Report"). ▪ The Oversight Report contains: o Quarterly investment performance report covering both public and private investment managers o Compares the ASRS' total fund and asset class performance to its policy objectives o Contains total plan attribution analysis, i.e., the contribution to return of the asset allocation effect, manager selection effect, interaction effect, and residual effect o Includes total fund peer universe comparisons for cumulative performance and risk statistics (1, 3, 5 and 10 years) o Compares asset allocation to policy for compliance purposes o Performance summary for public and private asset class composites - cumulative returns are presented o Additional risk statistics/peer comparisons are presented for public market asset classes ▪ The IPR contains: o Total Fund Performance Summary o Internally Managed Portfolio Performance Summary (US Equity passive investments) o Asset class performance summary and analysis o Investment manager performance analysis, including risk statistics and peer universe rankings for public market asset classes
Annually	▪ Annual asset class reviews for Equities, Fixed Income, Inflation Linked, Private Equity, and Real Estate presented to the IC. ▪ IMD Staff prepares/presents along with General and Specialty Consultants. ▪ Final performance data from General Consultant or back office private investment service provider. ▪ Reports provide in-depth reviews of each asset class and underlying investment managers. ▪ The annual staff reports are less detailed at the individual manager/investment level for the private market asset classes (Private Equity and Real Estate), but these asset classes are also reported on by specialty consultants.

- Private/alternative asset monitoring is covered separately in this report.

- **Recommendation:**

Task 1.c: Determine the processes the ASRS uses to monitor how well its investment strategies and objectives are performing and guide it toward meeting its expected rates of return
Recommendation: Gallagher recommends that the ASRS ask NEPC to include consecutive calendar year performance for the most recent ten years in the quarterly IPR.

d. Compare the processes the ASRS uses to monitor how well its investment strategies and objectives are working to best practices, including but not limited to industry standards;

- **Background Summary of Best Practices/Industry Standards**

- Key components to monitoring: Thorough and comprehensive monitoring of investment strategies and objectives is considered essential. The key components to monitor are:
  1. Investment performance
  2. Investment risks
  3. Compliance with policy/guidelines
  4. Periodic, in-depth review of managers
- Those charged with responsibility for oversight of sophisticated investment programs require clear, concise, consistent reports to monitor the performance and risk of the programs.
- Investment Policy Statement:
  - An overall investment policy statement and guidelines are essential for monitoring, measuring and analyzing portfolio performance, risk, and structure relative to the objectives.
  - The fund IPS will typically discuss who has responsibility for monitoring investment manager performance and the minimum requirements for manager monitoring, e.g., whether the Board will meet with managers on a regular basis, how often performance will be reviewed, etc. The IPS may also outline the use of a "watch-list" to aid in manager monitoring.
- Reporting:
  - Most major funds rely on a combination of staff and consultants to perform the monitoring function and to provide periodic reports to the Board.
  - Monitoring and reports should be executed on a regular periodic schedule (e.g., quarterly).
- Report Content: Investment performance reports typically include data on individual managers, asset class composites, and the total fund in two main areas:
  - Investment performance: Track holdings; account for cash flows and transactions; calculate periodic investment rates of return; compare returns to appropriate benchmarks; and rank in a peer universe.
  - Investment risks: Based on portfolio holdings, report portfolio characteristics such as price/earnings, price/book, dividend yield, earnings growth ratios (for equity) and maturity, duration, yield, convexity (for fixed income); observe how portfolio holdings are distributed among sectors and industries; calculate measures of volatility for the portfolio; compare characteristics, diversification, and volatility to that of an appropriate benchmark and peer group. Estimate the role of investment style in the manager's returns (if relevant to the investment structure of the fund). Apply sophisticated portfolio analytic systems to

estimate the risk of the portfolio on a forward looking basis (such as estimated tracking error).

- Questions to Answer: Thorough reports are designed to enable fiduciaries to answer a set of key investment questions such as:
  - How does the performance of the investment program and its individual components compare to its objectives (usually expressed as a benchmark and a relative time period)?
  - Is the investment program generating appropriate risk-adjusted returns, compared to stated objectives, typically that of a benchmark?
  - What are the nature and magnitude of the risks incurred by the investment program and its components?
  - How does the risk level compare to its benchmark(s)?

- **Observations**
  - Overall, the ASRS appears to follow a comprehensive monitoring process that is in accordance with industry standards.
  - The ASRS reviews investment performance in the reports outlined above under Section 1.c.

Report Frequency	Report Information
Daily	▪ The availability of daily preliminary performance is a tool not available to all funds and exceeds industry standards. ▪ Good for IMD staff to be able to see when necessary, but important for Board to not get too caught up in very short-term performance.
Weekly "Market Info Report"	▪ Useful for staff and Board to stay abreast of market conditions. ▪ Summary of historical fiscal and calendar year total fund numbers can help to put things in perspective.
Monthly	▪ Final unofficial public markets portfolio performance as calculated by State Street. ▪ Useful as "flash" report, which is a best practice.
Quarterly	▪ The ASRS' general consultant (NEPC) prepares two quarterly investment performance reports covering both public and private investment managers. o Overall, these reports are very thorough and address the major performance reporting needs and meet industry standards. o One area that is lacking is that the reports do not contain consecutive or calendar year performance. Gallagher believes it is important to look at individual year performance as well as cumulative returns (e.g., 1, 3, 5, 10 years), which is presented. See recommendation for 1.c. ▪ As stated above, IMD Staff conducts quarterly reviews with all managers, which is at the high end of industry standards. It is typically a minimum best practice to meet with investment managers annually, either in person or via conference call, depending on the nature of the strategy.
Annually	▪ Annual asset class reviews for Equities, Fixed Income, Inflation Linked, Private Equity, and Real Estate presented to the IC. o The thorough evaluation of the structure and performance of each asset class is a best practice.

- As noted above, the ASRS has made the decision not to use a "watch-list." There are differing opinions in the industry as to the usefulness of a watch-list and whether it adds any real value to the monitoring process. While Gallagher believes a watch-list can be a beneficial tool, the use of one is not necessary as long as a thorough monitoring process is followed.

- **Recommendations:** See 1.c above

e. Determine whether the ASRS met its overall expected rates of return during the past 10 fiscal years;

- **Overall Observations:** Over the ten fiscal years analyzed, the Fund has surpassed its Policy Index (7.5% vs. 7.2%), but lagged its 8% assumed actuarial investment rate.

- **Observations:**
  - It is industry standard to report investment performance on a gross of fees basis particularly when used for peer universe comparisons so that investment manager skill can be evaluated independent of the level of fees, which can vary from fund to fund.
  - Since the ASRS ultimately only receives net of fees performance, Gallagher used net of fee calculations to evaluate whether the Fund met its Actuarial Rate or Policy Index, as shown in the table below.
  - Gallagher calculated the ASRS total fund and composite net of fees returns using data supplied by the Fund in our performance measurement system - PARis. See also Appendix 1.e.1 and 1.e.2 for additional exhibits.

Years ending 6/30:	Fiscal Year (FY) Return	Interim Policy Index	Did FY Meet Policy Index? (Y/N)	Actuarial Rate	Did FY Meet Actuarial Rate? (Y/N)	Rolling 20 Year Return	Did rolling 20 Meet Actuarial Rate? (Y/N)
2014	18.6%	17.8%	Y	8.0%	Y	8.9%	Y
2013	13.1%	12.6%	Y	8.0%	Y	8.0%	Y
2012	1.3%	1.3%	Y	8.0%	N	8.2%	Y
2011	24.6%	24.4%	Y	8.0%	Y	8.9%	Y
2010	14.8%	13.1%	Y	8.0%	Y	8.1%	Y
2009	(18.7%)	(19.1%)	Y	8.0%	N	7.8%	N
2008	(7.5%)	(5.7%)	N	8.0%	N	9.7%	Y
2007	17.7%	18.6%	N	8.0%	Y	10.3%	Y
2006	10.0%	8.8%	Y	8.0%	Y	10.0%	Y
2005	8.5%	7.8%	Y	8.0%	Y	11.0%	Y

  - The ASRS met or exceeded the 8% actuarial assumed rate in seven out of the past ten fiscal years.
  - On a rolling 20-year basis, the Fund met or exceeded the actuarial assumed rate in nine out of the past ten fiscal years.
  - The ASRS met or exceeded its Interim Policy Index in eight out of the past ten fiscal years. The Interim Policy Index adjusts the weights in the SAAP to private equity and real estate pro rata as these asset classes are funded over time. This is an industry standard practice.

Periods ending 6/30/14	Plan Return	Interim Policy Index	Met? (Y/N)	Actuarial Rate	Met? (Y/N)
Three Years	10.8%	10.4%	Y	8.0%	Y
Five Years	14.2%	13.6%	Y	8.0%	Y
Seven Years	5.6%	5.4%	Y	8.0%	N
10 Years	7.5%	7.2%	Y	8.0%	N
20 Years	8.9%	NA	NA	8.0%	Y
Since Inception (6/30/75)	10.1%	9.8%	Y	8.0%	Y

- On a cumulative ten year basis, the ASRS exceeded its Interim Policy Index (7.5% versus 7.2%), but lagged the 8% assumed actuarial rate. However, over the rolling 20-year period ending June 30, 2014, the Fund outperformed the assumed actuarial interest rate (8.9% vs. 8.0%), which is the stated goal.
- Over three (10.8%), five (14.2%) and 20 (8.9%) year time periods, the ASRS exceeded the 8% actuarial rate; however, the ASRS lagged the 8% actuarial rate slightly over 10 years (7.5%) and over seven years (5.6%).
- The ASRS also beat its Interim SAA Policy Index over one, three, five, seven, and ten year periods ended June 30, 2014.
- Gallagher compared each asset class composite to its policy benchmark:

1. Most asset class composites, for which there is ten years of data, beat their benchmark for the ten years ended June 30, 2014. The only exceptions were:

Style/Asset Class	ASRS	Benchmark
International Developed Markets Equity	7.53%	8.72%
Total International Equity	6.68%	7.97%
Total Domestic and International Equity	7.88%	7.92%

2. For asset classes with less than 10 years of history, we looked at since inception returns. A few asset classes underperformed their benchmarks. (Since inception returns provided by ASRS):

Style/Asset Class	Since Date	ASRS	Benchmark
High Yield Fixed Income	10/1/09	10.6%	11.6%
Farmland and Timber	9/1/13	(46.4)%	3.9%
Private Equity	1/1/08	4.6%	7.3%
Real Estate	10/1/05	3.7%	4.9%

3. See Section 1.h. below for our comments on the underperformance of these asset classes and strategies.

- **Recommendations**: Not Applicable

f. Compare the ASRS' overall expected rates of return during the past 10 fiscal years to best practices, including but not limited to industry standards, and peer retirement systems;

- **Background Summary of Best Practices**
  - See 1.B above
- **Observations**
  - See 1.B above
- **Recommendations**: Not Applicable

g. Compare the ASRS' investment performance to peer retirement systems' performance;

- **Background**
  - Peer universe comparisons are one of many performance measurement tools used to monitor total fund investment performance.
  - While interesting and informative, total fund peer universe comparisons are not "apples to apples" since the asset allocation policy can vary dramatically from one plan to the next.
    1. Plans that have "riskier" asset allocations may perform better during strong bull markets, but underperform peers during market corrections.
    2. It is therefore important to consider peer universe comparisons as just one element in overall performance evaluation.
  - Peer universes are more relevant for specific manager universes of a certain style, e.g., core fixed income. These universes are typically *gross of fees*.

- **Overall Observations:** The Total Fund ranks in the top quartile versus a universe of other public pension plans (16th percentile) for the 10 year period analyzed.

- **Observations**
  - Gallagher compared the Fund fiscal year performance to the All Public Plans. The total fund universe in PARis was utilized (see Appendix 1.g.1 and 1.g.2).
    1. The Fund performance ranks in the top quartile for five of the ten years.
    2. The Fund ranks above median for eight of the ten years.
    3. The Fund ranked in the bottom quartile for two of the ten years.
       a) Total Fund performance for FY ended June 30, 2008 was -7.28%, which ranked 91st. This was also one of the two years where the Fund underperformed the Interim SAA Policy Index (-5.68%, rank of 78th percentile). Median fund performance was -4.22%.
       b) Total Fund performance for FY ended June 30, 2009 was -18.44%, which ranked 77th. This was better than the Interim SAA Policy Index (-19.11%, rank of 81st percentile). Median fund performance was -15.64%.
    4. The Fund ranked in the top quartile for cumulative periods ended June 30, 2014.
       a) The Fund ranked in the 16th percentile for the 10 years ended June 30, 2014.
       b) Total Fund ranked in the 4th percentile for the 5 years ended June 30, 2014.
       c) Total Fund ranked in the 10th percentile for the 3 years ended June 30, 2014.
  - Gallagher compared each asset class composite to the appropriate peer universe, for which peer data is available, in PARis (see Appendix 1.g.3-1.g.15). Gallagher discusses any underperformance in section 1.h. below. Note, we use *gross of fees* performance (industry

standard) for peer universe comparisons. For asset classes with less than ten years of performance history, we looked at since inception returns.

Investment Strategy	Sub Category	Quartile Ranking	Observations
Domestic Equity	Total Domestic Equity	22nd – Second Quartile	▪ Domestic Equity performed in the top quartile of the public plan universe (22nd percentile) for the 10 years ended June 30, 2014.
	Large Cap Equity	75th – Fourth Quartile	▪ Since the majority of this asset class is passively managed we would not expect outperformance. Over the 10 years, the S&P 500 Index ranked 81st and the ASRS ranked 75th. ▪ Five year ranking was 55th and 53rd percentile for ASRS and the S&P 500 respectively.
	Mid Cap Equity	Second Quartile	▪ Mid Cap Equity ranked in the second quartile (47th percentile) over the 10 year period analyzed.
	Small Cap Equity	Second Quartile	▪ Small Cap Equity ranked in the second quartile (above median) over the ten year period analyzed, with the exception of the six months ending 6/30/2014 (56th percentile).
International Equity	Total International Equity	Third or Fourth Quartile	▪ International Equity ranked in the third or fourth quartile (below median) over the ten year period analyzed, with the exception of the six months ending 6/30/2014 (46th percentile).
	International Developed	Near Median	▪ International Developed ranked near or below median for most of the 10 year period analyzed.
	Emerging Markets Equity	Second Quartile	▪ Emerging Markets Equity ranked in the second quartile (above median) since its inception.
Fixed Income	Core Fixed Income	78th - Fourth Quartile	▪ Core Fixed Income ranked in the fourth quartile (78th percentile) of the PARis public plan universe for the ten year period analyzed. ▪ Since this asset class is passively managed (or enhanced passive) we would not expect outperformance. Over the 10 years, the Barclays Aggregate ranked in the 92nd percentile.
	Emerging Debt	Fourth Quartile	▪ Emerging Debt ranked in the fourth quartile for the one year time period analyzed.
	High Yield	21st- First Quartile	▪ High-Yield ranked in the first quartile (21st) for the three years ended June 30, 2014 and second quartile (36th) for the one year time period.
Commodities		29th- Second Quartile	▪ Commodities ranked in the second quartile (29th) over the three year period analyzed.
Real Estate		Second Quartile	▪ Real Estate ranked in the second quartile over the one, three and five year periods analyzed.
GTAA		First Quartile	▪ GTAA ranked in the first quartile over all of the periods analyzed over the last 10 years.

- **Recommendations**: Not Applicable

h. Determine the causes for any underperformance, including any procedures or requirements that limit the ASRS' investment strategies;

- **Overall Observations**
  - As detailed below, the most significant underperformance realized by the Fund occurred as a result of the economic crisis of 2008-2009.
  - Gallagher did not find that the Fund's performance suffered as a result of any procedures or requirement.

- **Observations**
  - Assumed Actuarial Rate: The fiscal years in which the Fund underperformed its 8% target were 2008, 2009, and 2012. On a rolling 20-year basis, the Fund underperformed only in fiscal year 2009.
    1. The effects of the economic crisis caused the majority of pension plans to fail to achieve their actuarially assumed rate of return in 2008 and 2009.
       a) ASRS' peer universe and policy benchmark also suffered negative returns in these years (see Appendix 1.g.1).
       b) The large negative returns achieved in these years have had a significant impact on cumulative returns over seven and ten years.
    2. In fiscal year 2012, the Fund only slightly underperformed the SAAP (1.3% vs. 1.4%), but market conditions made it extremely difficult to achieve an 8% return for ASRS.
       a) Peer funds also posted very low returns over this time period as the median was 1.02% (see Appendix 1.g.1).
       b) Equities struggled during this time period, with low to negative returns for domestic equity benchmarks and negative international equity returns for both developed and emerging markets.
       c) Fixed income performed well (ASRS Fixed Income 8.1% vs Barclays Aggregate 7.5% for year ended 6/30/14)
       d) The real estate and private equity portfolios returned double digit during this year (12.31% and 15.43%, respectively) and helped to balance out the low to negative public equity returns.
  - Most asset classes for which there is ten years of data beat their benchmark for the ten year ended June 30, 2014. The only exceptions are explained below (See also Appendix 1.e.1 and 1.e.2):
    1. International Equity:

Style/Asset Class	10 Year Returns	
	ASRS	Benchmark
International Developed Markets Equity	7.53%	8.72%
Total International Equity	6.68%	7.97%
Total Domestic and International Equity	7.88%	7.92%

       a) International Developed Markets Equity lagged its benchmark in eight of the last ten years.

b) It is noteworthy that the two years it outperformed (2009 and 2012) were high negative years for this asset class.

c) As noted, approximately 50% of this asset class is passively managed as of June 30, 2014.
  - The large cap international passive portfolio has an inception date of July 2009.
  - The small cap international passive portfolio has an inception date of June 2010.
  - The passively managed portfolios have tracked their benchmarks very closely.

d) Only one of the managers currently in place (Large Cap International) has a ten year history with the Fund. This manager makes up approximately 11% of the developed markets portfolio.

Large Cap International Equity Manager	ASRS	Benchmark
Since Inception (October 1998)	10.00%	6.90%
Ten Years	7.10%	8.40%
Three Years	9.60%	8.50%
One Year	28.40%	23.70%

e) The second longest manager within the Fund is an International Small Cap manager.

International Small Cap Manager	ASRS	Benchmark
Since Inception (September 2005)	7.30%	7.00%
Five Years	13.90%	15.50%

f) Manager Changes: IMD staff reviewed the International Large Cap Equity sub asset class and restructured the managers in this asset class in late 2013 early 2014.
  - With the Fund restructuring, ASRS terminated three managers, which staff determined had poor relative performance and high tracking error versus the benchmark: two EAFE Growth managers and an EAFE Value Manager. All three of these managers detracted from the performance of the International Equity composite. For example, for the one and three years ended February 28, 2014 (the date of the Total Public Equity Asset Class Review) compared to MSCI EAFE:

EAFE Value Manager	ASRS	Benchmark
One Year	8.49%	19.74%
Three Years	19.74%	7.11%
EAFE Growth Manager	**ASRS**	**Benchmark**
One Year	14.55%	19.74%
Three Years	3.67%	7.11%
EAFE Growth Manager	**ASRS**	**Benchmark**
One Year	6.88%	19.74%
Three Years	NA	7.11%

  - Several new managers have been hired in 2013 and 2014 and it is too soon to judge their performance.

- Three new EAFE managers were hired June 2014.
- A new EAFE small cap manager was hired June 2013.

- As mentioned above, the following asset classes with less than ten years of history underperformed their benchmarks (See Appendix 1.e.1 and 1.e.2):

<table>
<tr><th>Investment Strategy</th><th>Reasons for Underperformance</th></tr>
<tr><td>High Yield Fixed Income</td><td>
<table><tr><td>Inception Date</td><td>ASRS</td><td>Benchmark</td></tr><tr><td>10/01/09</td><td>10.6%</td><td>11.6%</td></tr></table>

High Yield Fixed Income underperformed its benchmark in three of the four last fiscal years.
The ASRS has two active managers in the high yield space, which have both underperformed slightly over all cumulative time periods reported.
The ASRS had a third high yield manager that was more conservative (i.e., higher quality) and its underperformance was the main drag on the overall portfolio since “riskier” segments of the market outperformed. Through 3/31/14, this manager returned 9.6% vs. 11.7% for the benchmark since inception of October 2009.
</td></tr>
<tr><td>Farmland and Timber</td><td>
<table><tr><td>Inception Date</td><td>ASRS</td><td>Benchmark</td></tr><tr><td>09/01/13</td><td>(46.4)%</td><td>3.9%</td></tr></table>

Farmland and Timber returned 4.2% vs. 2.6% for its benchmark for the six months ended 6/30/14.
NEPC reports an inception to date IRR of 1.3% in its June 30, 2014 IPR.
It is too early in the lifecycle of this investment to judge its performance.
</td></tr>
</table>

<table>
<tr><th>Investment Strategy</th><th>Reasons for Underperformance</th></tr>
<tr><td>Private Equity</td><td>
<table>
<tr><td>Inception Date</td><td>ASRS</td><td>Benchmark</td></tr>
<tr><td>1/01/08</td><td>4.6%</td><td>7.3%</td></tr>
</table>

Private Equity underperformed its benchmark in four of the last seven years on a time-weighted return basis.
<u>Benchmark</u>: The index/benchmark proxy for private equity is the Russell 2000 Index, which consists of small cap stocks. While this is a reasonable proxy, it is not a direct comparison. There is not an investable private equity benchmark.
Private Equity investments are better evaluated on a dollar weighted return basis (i.e., IRR or Internal Rate of Return) given the nature of their cash flows and their long time horizon.
When evaluating Private Equity it is also important to understand the long time horizon of this asset class. It will take approximately 7-8 years to reach the proposed target allocation for private equity. There is a commitment period, drawdown period, and finally a realization period. Capital is first committed to a variety of limited partnerships over a number of vintage years. For each partnership, capital is drawn down through “capital calls” over a number of years to fund the initial commitment. An individual partnership’s investment cycle typically begins with what is called a “J-curve,” where the portfolio exhibits losses (negative performance) as fees are paid and capital is called with no investment gains realized. The investment period for a partnership is typically 3-4 years with a holding period of an additional 4-6+ years. As the investments mature and the portfolio experiences unrealized and realized gains performance starts to turn positive.
The Total Private Equity Portfolio has achieved an IRR of 12.9% vs. 16.3% for the Russell 2000 quarter lagged.

The Russell 2000 Index has had very strong performance over recent years – with a five year return through 6/30/14 of 24.31%.
The IRR achieved by the ASRS portfolio is in line with expectations for this asset class.
Private equity investments are best evaluated on a vintage year basis and over the long-term given the nature of the asset class and expectation for early year negative returns (i.e., the “j-curve” effect).

</td></tr>
</table>

Investment Strategy	Reasons for Underperformance
Real Estate	Inception Date: 10/01/05; ASRS: 3.7%; Benchmark: 4.9% ▪ Real Estate underperformed the NCREIF ODCE in four of the last eight years. ▪ The only years with significant underperformance were 2008 (-7.03% vs. 12.00% for the NCREIF ODCE) and 2009 (-37.19% vs. -23.98% for the NCREIF ODCE). ▪ The ASRS portfolio significantly outperformed in 2010 (1.16% vs. -18.75% for the NCREIF ODCE). ▪ ASRS' portfolio is broken out into Core (Private and Public), Non-Core (Enhanced Return, High Return, and Separately Managed), and the Arizona Owned Assets. Private real estate investments are long-term investments and can be difficult to exit. ▪ The Core portion of the portfolio beat its benchmark (4.4% vs. 4.2%) and makes up approximately 18% of the total. ▪ The Non-Core portfolio has been the drag on performance since inception, returning only 0.6%, but has achieved solid one, three and five year returns (13.6%, 12.9% and 9.5%, respectively, versus the ODCE returns of 12.7%, 12.0% and 6.3%). o These "riskier" assets are more volatile. o The plan is currently overweight opportunistic investments and this will be reduced over time to target weights. ▪ The Arizona Owned Assets have returned 10.5% since October 2005.

- **Recommendations**

Task 1.h: Determine the causes for any underperformance, including any procedures or requirements that limit the ASRS' investment strategies
Recommendation: The ASRS should continue to monitor performance of the Fund and the underlying strategies and adjust its asset allocation and restructure asset classes as appropriate and reasonable.

i. Determine the impacts of any underperformance;

- **Observations**
  - The large negative returns achieved in 2008-2009 have had a significant impact on cumulative returns over seven and ten years, but recent strong bull markets have helped to lift overall returns.
  - Contribution rates have increased from a total of 10.40% in Fiscal Year 2005 to 22.60% in Fiscal Year 2014 (includes employee and employer); however, this is only partly attributable to investment performance or underperformance as many other factors go into actuarial calculations.
  - The ASRS has maintained the necessary liquidity to pay benefits.
  - The ASRS has restructured the asset classes where the most significant underperformance was realized.

j. Make recommendations for improving the ASRS' investment performance, as appropriate.

- **Observations**
    - See recommendations in sections above

Task 2: Alternatives

Task 2: Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments, identify the reasons for and impact of any inadequate controls and make recommendations for improving controls, as appropriate.

a. **Identify the processes and other controls the ASRS uses for selecting, developing terms and conditions for, monitoring, and valuing investments, and terminating alternative investment manager contracts;**

- **Observations**

  The ASRS has a well-defined process for selecting and evaluating alternative investment managers, as detailed in the ASRS's Strategic Investment Policy (SIP006). The process includes seven areas of interest:
  1. Opportunity Set – Sourcing
  2. Opportunity Set – Screening
  3. Analysis and Due Diligence
  4. Asset Class Committee Meetings – Decision Making
  5. Post-Committee Meeting Documentation and Dissemination
  6. Governance Oversight
  7. Post-Investment Manager and Co-Investment Selection Monitoring

  - The process establishes a rigorous framework for evaluating alternative investments for the Fund. It is written in a way that allows the concepts to be applied across a broad range of strategies. This will help ensure that the same philosophy is applied across the entire portfolio, while maintaining the flexibility required to effectively evaluate strategies in different asset classes.
  - As a result of our sample auditing, no terminations of any alternative investments was noted. The policies, procedures and practices in place by the ASRS are adequate. The monitoring by the ASRS personnel and the independent consultant, NEPC, cover the issue of termination of an alternative investment. As a matter of record, private equity and alternative investment strategies are not terminated unless performance becomes an issue and the fact that the lack of liquidity in the marketplace is a factor.
  - The most recent version of the Strategic Investment Policy is dated November 16, 2012.

  The ASRS employs outside legal counsel to review relevant documents for each of the alternative investment partnerships that it considers for the Fund. Private equity and corporate private debt investments are reviewed by Foley and Lardner; real estate transactions and real estate private debt transactions are reviewed by Cox, Castle and Nicholson. As part of this audit, both law firms submitted a written description of the process they follow when reviewing these potential investments.

  The ASRS employs an ongoing process for monitoring alternative investment managers. Several periodic publications are a part of the monitoring procedures:

Frequency	Report Information
Monthly	▪ Prepared by the ASRS staff: reports including current estimates of market values, cash flows, unfunded commitments, performance, portfolio allocations, and a listing of current investments.
Quarterly	▪ Prepared by the ASRS Staff: Quarterly chart pack, which includes performance data (both internal rate of return and total multiple) for each investment as well as aggregate performance data by strategy. ▪ Prepared by the General Consultant (NEPC): Report including market values and current performance statistics by manager and by strategy.
Annually	▪ Prepared by the ASRS Staff: Annual Asset Class Reviews, which provide an overview of each respective investment program and strategy as well as data on performance and allocations by strategy.

The ASRS relies on the annual audit of each fund conducted by the General Partner (GP, manager) for the official value of its investments. Each GP accounts for their investments at fair value, as prescribed in accounting standards, and employs an independent auditor to provide an opinion on the methodology used for the annual financial statements and to verify that the statements are free of any material misstatement. The ASRS relies on the independent auditor's opinion, but it also reviews individual partnerships to determine if there are any discrepancies between the GP and the auditor's opinion. To date, the ASRS has reviewed 20 partnerships and not found any discrepancies. For interim periods, the ASRS uses regular reports by Grosvenor (formerly Credit Suisse) to show cash flows and current net asset values (NAVs).

- **Recommendations**

Task 2.a: Identify the processes and other controls the ASRS uses for selecting, developing terms and conditions for, monitoring, and valuing investments, and terminating alternative investment manager contracts
Recommendations: 1. Gallagher recommends that the ASRS conduct a thorough review and update of the Strategic Investment Policy at least annually (and more frequently if needed). The current version has been in place for more than two years. 2. In order to gain additional confidence in valuations, the ASRS should sample a greater number of partnerships. Sampling should include sufficient partnerships to represent at least 50% of the market value of the total alternative investment portfolio.

b. Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014;

- **Observations**

The ASRS has invested in 146 (as of 6/30/2014) individual alternative investment partnerships. As a part of this review, Gallagher reviewed a representative sample of partnerships from each of the underlying investment categories that make up the alternative investment allocation. Our review focused on applying the seven areas of focus from SIP006 to each of the selected partnerships.

- Our sample is intentionally diverse, including partnerships from different vintage years and commitments of various sizes. In the selection, we ensured that our sample represented at least 50% of the current market value in each alternative investment category. The full list of investments, including their respective category, that were included in the sampling review is included below:

- With each of the selected partnerships, we reviewed the available documentation for evidence that each investment adhered to the seven focus areas explained in the procedure. The current version, SIP006, was approved in November 2012. The current document was not in place during the period of due diligence for every partnership that was reviewed, since the review included partnerships dating back to 2004. Prior processes, most notably the ASRS' Private Equity Procedures Manual dated August 2, 2007, include many of the same concepts and focal points that are currently outlined in SIP006. Given the similarities in focus, we have evaluated every partnership using a consistent set of criteria. It should be noted, therefore, that the process has been refined over time and that recent partnerships were expected to have more detailed documentation than those that predate the current procedure.

- Gallagher has drawn the following conclusions from the individual partnership review:

  1. <u>Opportunity Set – Sourcing:</u> The ASRS uses several sources to source individual investment opportunities, including third party databases and the specialty consultants that advise the ASRS on each asset class. The ASRS maintains a robust forward calendar, including several managers that are expected to be in the market over the next five years.

     Unfortunately, most of the individual partnership materials that have been reviewed did not include specific information regarding the original source of the investment opportunity. It is possible in specific instances to identify the source from the materials presented, but this is the exception rather than the rule.

  2. <u>Opportunity Set – Screening:</u> The ASRS provided multiple screening tools that included several of the private equity partnerships. The tools demonstrate that the ASRS considers many different criteria in determining which funds warrant additional due diligence.

     Much like the Sourcing section, we found that most of the individual partnership materials that have been reviewed did not include specific information regarding the screening process. It is possible in specific instances to identify the source from the materials presented, but this is the exception rather than the rule.

  3. <u>Analysis and Due Diligence:</u> The review of the due diligence process conducted for each of the partnerships in the sample yielded the most comprehensive evidence of the ASRS' investment process. The ASRS relies on specialty consultants for each asset class. For the purposes of our review, Gallagher focused on the investment memos produced by those consultants for the Private Markets Committee's consideration. For each partnership, we looked for evidence that the consultant had considered each of the criteria listed in

Appendix 1 of the SIP006 document: Organization, Staff, Strategy, Terms, Performance, Risk (both Investment and Operational), Disclosures, and Miscellaneous.

In general, we found evidence that the ASRS and its specialty consultants conducted thorough due diligence on each of the partnerships that were ultimately approved for the Fund. Two trends warrant additional discussion:

- There is a clear trend of improving materials over time. Due diligence materials for partnerships that have been reviewed and approved in recent years, following the current process, are far more robust and in many cases follow the current process explicitly.
- Meketa, the specialty consultant for private equity partnerships, has incorporated the due diligence criteria outlined in Appendix 1 of SIP006 directly into their due diligence memos as early as 2010. The inclusion of this checklist gives the Private Markets Committee written assurance that the specialty consultant has considered all of the applicable criteria and found that the perspective investment meets the requirements for the ASRS consideration.

4. Asset Class Committee Meetings – Decision Making: Each investment in the ASRS must be approved by the appropriate Committee. In our review, we looked for the meeting minutes in which a motion was passed and approved for each of the selected investments. We also reviewed the ongoing documentation provided by Grosvenor, which lists the Commitment Date, for consistency with the meeting minutes.

5. Post-Committee Meeting Documentation and Dissemination: Upon formal approval, meeting minutes are disseminated to the relevant parties including the Investment Committee Trustees, the ASRS general investment consultant, and Internal Audit.

6. Governance Oversight: SIP006 requires an independent review, conducted annually by the general consultant, to ensure that the ASRS' investments are consistent with the Policy and the due diligence procedures that are outlined in Appendix 1. We reviewed annual reviews conducted by NEPC for the ASRS as of June 30th for calendar years 2009-2014. These reviews, like the due diligence materials, have grown more informative and comprehensive over time. In the most recent review, comments on portfolio-level investment strategy and Policy compliance, performance, risk, and Asset Class Committee meetings were included.

   The materials provided show evidence that NEPC is reviewing the processes employed and the decisions made by the Private Markets Committee. In the 2Q-2014 Independent Review, NEPC comments on five Asset Class Committee meetings. In this review, NEPC comments specifically on three investment recommendations that were approved by the Private Markets Committee. For each investment, NEPC certifies that the investment is consistent with the strategic asset allocation strategy, that the due diligence process was completed in accordance with SIP006 and that the investment was formally approved.

7. Post-Investment Manager and Co-Investment Selection Monitoring: The ASRS employs a series of reports and materials in its investment monitoring process. Grosvenor provides quarterly statements with details on the alternative investments. In addition, the ASRS staff produce monthly reports and a quarterly chart book, including information on each of the

investments. Lastly, the general consultant includes data on each investment in its full quarterly report. Overall, the monitoring process is extremely robust.

- **Recommendations**

Task 2.b: Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014
Recommendations: 1. Gallagher recommends including sourcing information and screening criteria in the final investment memo for each partnership. These are active parts of the investment process. It would also be beneficial to document where each opportunity came from and what characteristics drove the team to undertake additional due diligence. 2. Gallagher recommends that all specialty consultants adopt Meketa's practice of incorporating the due diligence checklist, as presented in Appendix 1 of SIP006, into their recommendations. The checklist provides a tangible record that the due diligence has been performed as prescribed by the consultant, which should give the Private Markets Committee additional confidence in considering the recommendations made by the consultant. Making the checklist a standard practice will also help to ensure consistency across the evaluation of each potential investment. 3. The ASRS should continue the independent reviews of Asset Class Committee meetings by NEPC. Record NEPC's reviews in a single document for ease of review and monitoring. NEPC's independent verification that the process has been followed for each investment serves as an important check and balance to ensure that every investment has been vetted properly.

c. Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts;

- **Observations**

The ASRS employs two outside law firms to conduct legal reviews of its prospective alternative investments. Foley & Lardner LLP (Foley) is employed to conduct a legal review of private equity and hedge fund strategies and Cox, Castle & Nicholson LLP (CCN) reviews documents pertaining to real estate investments.

As a part of this project, both Foley and CCN prepared memoranda explaining the key parts of their process and how they negotiate to improve terms for the ASRS. Appendix 2.c includes the key issues that each firm raised in their memorandum that are a part of the legal review.

Overall, the legal review process appears to be thorough and reasonable. By using long-standing partners, the ASRS has a reasonable basis for expecting that both firms can use their detailed knowledge of the ASRS to work towards improving subsequent contracts.

- **Recommendations**

Task 2.c: Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts
Recommendations: 1. The ASRS should continue to utilize both firms in the legal review of fund terms and documents, as appropriate.

Task 2.c: Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts
2. While both firms' have appeared to serve the ASRS well, a documented, periodic review of each service provider can help ensure that the firms continue to serve in the best interest of the Plan. We recommend that such a review be conducted at least every three years.

d. Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices, including but not limited to industry standards;

- **Background Summary of Best Practices**

In evaluating individual alternative investments, it is critical to employ consistent, rigorous standards to ensure the overall quality of the due diligence process. Gallagher believes that the process should include several key elements, including:

1. Initial contact and information showing where the investment idea originated;
2. Preliminary review and evaluation of the fund as a candidate for additional due diligence;
3. Comprehensive due diligence review, including (but not limited to):
   - Organizational Stability, focused on key personnel
   - Investment Strategy and Process
   - Investment Risk
   - Operational Risk
   - Performance Track Record
   - Investment Terms
   - Market Environment and Industry Overview
   - Legal Review and Negotiated Terms
2. Full Documentation of the investment review and approval process;
3. Ongoing monitoring, including both qualitative and quantitative evaluations.

In addition to our internal expertise, we also consulted an independent source to further refine our perspective on best practices and industry standards. We consulted fi360's 2013 publication, *Prudent Practices for Investment Stewards (U.S. Edition)*, for additional insight on the evaluation of the ASRS' processes and controls. See Appendix 2.d.1 for a listing of the best practices included in the publication. In this part of the evaluation, we focused specifically on the following practices (criteria designations are consistent with the identification presented in the publication):

Practice 3.3	Decisions regarding investment strategies and types of investments are documented and made in accordance with fiduciary obligations of care.
3.3.1	Decisions regarding investment strategies and types of investments are documented and made in accordance with fiduciary obligations of care.
3.3.2	Decisions regarding the selection of investments consider both qualitative and quantitative criteria.
3.3.3	The documented due diligence process used to select investments and third-party Investment Managers is consistently applied.

Practice 3.3	**Decisions regarding investment strategies and types of investments are documented and made in accordance with fiduciary obligations of care.**
3.3.7	Decisions regarding the use of separately managed and commingled accounts, such as mutual funds, unit trusts, exchange-traded products, and limited partnerships, are documented and made in accordance with obligations of care.
3.3.8	Decisions to use complex investments or strategies, such as alternative investments or strategies involving derivatives, are supported by documentation of specialized due diligence conducted by individuals who possess knowledge and skills needed to satisfy the heightened obligations of care.

Practice 4.1	**Periodic reports compare investment performance to appropriate index, peer group, and investment policy statement objectives.**

Practice 4.2	**Periodic reviews are made of qualitative and/or organizational changes of Investment Advisors, Investment Managers, and other service providers**
4.2.1	Periodic evaluations of the qualitative factors that may impact the results or reliability of Investment Advisors, Investment Managers, and other service providers are performed.
4.2.3	Deliberations and decisions regarding the retention or dismissal of Investment Advisors, Investment Managers, and other service providers are documented.
4.2.4	Qualitative factors that may impact service providers are considered in the contract review process.

- **Observations**
  - Overall, the ASRS employs the majority of the best practices identified above. The ASRS does an excellent job of documenting their process, executing the process as documented, and conducting periodic reviews to ensure adherence to the stated procedures.
    1. Among the best practices listed, the ASRS employs a clear, written process consistently across opportunities.
    2. The ASRS employs several outside advisors with the requisite expertise to ensure that the ASRS receives an appropriate level of guidance when considering alternative investments for its Fund. Specifically, the specialty investment consultants and legal representation the ASRS has are suitable partners for effectively evaluating and executing these investments.
  - The ASRS can improve its process by incorporating some of the early phases into the final due diligence materials. Specifically, information on the sourcing and screening of investments would be helpful as the Private Markets Committee reviews individual investment opportunities.

- **Recommendations**

Task 2.d: Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices, including but not limited to industry standards
Recommendations: 1. As listed in Section 2.b, Gallagher recommends the inclusion of sourcing and screening information in final due diligence materials on each fund. 2. A periodic review of all service providers (both investment advisors and legal representation) would help to ensure that the ASRS continues to receive high-quality guidance and advice at a reasonable cost. We recommend that these reviews be conducted at least every three years.

e. Identify the reasons for and impacts of any inadequate processes or other controls; and

- **Observations**

The ASRS employs reasonable procedures in evaluating investment opportunities for the Fund. Historically, the ASRS has documented and maintained records on each investment in a sufficient fashion. Finally, the monitoring of each investment is robust and allows for an appropriate level of oversight once an investment is added to the Fund.

Given these perspectives, Gallagher does not consider the current processes to be inadequate. The remainder of this section, therefore, will focus on the potential impact of specific recommendations that are outlined in this review.

- Recommendation: Add sourcing and screening information to its final due diligence materials for each fund.
- Potential Impact: The ASRS team, along with its external consultants (Meketa, Credit Suisse, Ennis Knupp & Associates, NEPC, Franklin Park, Townsend Group, Robert Charles Lesser & Co.), appear to have reasonable sourcing and screening procedures in place based on the information reviewed in this analysis. This has been incorporated into practice, and will allow the ASRS to better evaluate its procedures for sourcing and screening investments. A clear record of where an investment idea originated and why the team chose to pursue the idea for additional due diligence may help focus future efforts, allowing the ASRS to concentrate on the most advantageous sources and the most clear characteristics that tend to lead to successful investments.

- Recommendation: Require each investment advisor to incorporate the due diligence checklist (as defined in Appendix 1 of SIP006) into its final memorandum.
- Potential Impact: This practice provides a written record to demonstrate to both the Private Markets Committee and other interested parties that the due diligence on each partnership was conducted in a manner consistent with the written procedures and the manager has met expectations.

- Recommendation: Periodically review each service provider to help ensure that the firms continue to serve in the best interest of the ASRS. We recommend that such a review be conducted at least every three years.

- Potential Impact: Regular reviews of outside service providers can give the ASRS confidence that it continues to receive the highest quality advice and guidance at a competitive cost.

o **Recommendations**: Not Applicable

f. Make recommendations for improving how the ASRS selects, develops terms and conditions, monitors, and terminates alternative investment manager contracts and values investments, as appropriate.

See previous sections for specific recommendations.

Task 3: Fees

Task 3: Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate. Tasks will include the following:

a. Identify the processes and other controls the ASRS uses for accepting and/or negotiating external investment manager fees;

- **Observations**

  - The ASRS does not explicitly outline a procedure for fee negotiation in the Strategic Investment Policy (SIP006); which outlines the other aspects of investment manager selection and indicates that terms (including fees/fee structure) should be part of screening and due diligence considerations.
  - The key takeaways from the ASRS' response to this question are as follows:
    - The ASRS has identified fee negotiation as a secondary concern to identifying quality managers in alternative asset classes, citing the performance difference between top quartile and median managers to be 500 basis points annually and therefore highlighting the primary importance of investing with the best available managers.
    - The ASRS works with outside counsel to negotiate and structure legal documents, and includes a "most favorable nations" clause to ensure the best fees compared to investors of a similar size.
    - The ASRS has employed separately managed accounts (SMAs) for all but one investment in the private debt portfolio, and plans to continue to transition the real estate portfolio to such structures for investment purposes as well as the favorable fees and legal terms that they afford.
    - For real estate investments, the ASRS negotiates amongst the finalist managers and models the net present value of fees, discounting incentive based fees at a higher rate than guaranteed fees to favor managers that earn a greater portion of their fees from strong performance.
    - For private debt investments, the ASRS uses a similar strategy to real estate and makes concentrated investments to increase the size of mandates and therefore its leverage in fee negotiations.
    - The ASRS engages in co-investment opportunities selectively, knowing that the opportunity for reduced fees must be balanced against the inconsistent record of returns for such investments.

- **Recommendations**

Task 3.a: Identify the processes and other controls the ASRS uses for accepting and/or negotiating external investment manager fees
Recommendation: The ASRS has a well-considered approach to negotiating investment fees that should be equally well articulated in the documented procedures for selecting investment managers. Gallagher recommends adding an Appendix to SIP006 that explicitly outlines the objectives and preferences for fee negotiations.

b. Determine whether the ASRS used the identified processes and controls for accepting and/or negotiating external investment manager fees for contracts the ASRS entered into during fiscal years 2005 through 2014;

- **Observations**

  - While the results would suggest that the ASRS did indeed follow the outlined procedures when negotiating investment manager fees, it is hard to say with certainty which measures were or were not taken for each particular investment.
  - There is strong evidence for successful fee negotiation on alternative investments, although a similar lack of documentation. The ASRS' analysis shows that the fund has achieved fee reductions of over $340 million, compared to standard market fees, for deals with a commitment size of over $100 million executed since 2011.

- **Recommendations**

Task 3.b: Determine whether the ASRS used the identified processes and controls for accepting and/or negotiating external investment manager fees for contracts the ASRS entered into during fiscal years 2005 through 2014
Recommendation: The documented procedures mentioned in Section 3.a should include a standard method for documentation of fee negotiations. The documentation should include, at a minimum, the proposed fees from the manager before negotiation, the ASRS proposed fee structure, the final agreement, and be signed by the person(s) responsible for the negotiation.

c. Compare the ASRS' processes and other controls over setting external investment manager fees to best practices, including but not limited to industry standards;

- **Background Summary of Best Practices**

  - The Government Finance Officers Association identifies several best practices in its Investment Fee Policies for Retirement Systems Best Practice (released September 2014, see Appendix 3.c):
    - Negotiate the lowest possible fees given knowledge of what similar investors are paying and include a most favored nation clause in the agreement.
    - Give an individual or group responsibility for negotiating fees, and require that they report before any agreement is signed.

  - Consider the importance of investment management fees amongst the multiple factors examined when selecting investment managers.
  - Consider separately managed accounts, establish fee breakpoints as the investment grows, and discuss excluding uninvested cash.
  - Fees for alternative investments should favor performance based fees, and consideration should be given to group purchasing arrangements and cooperative fees.
- In addition, Gallagher would advise using indexed investments in areas where the market is largely efficient, and reserving active management for market segments were the median manager has demonstrated an ability to consistently add value over the relevant benchmark net of fees.

o **Observations**

- The Fund has a considerable portion of assets invested in passive investments, particularly in efficient markets such as large-cap U.S. equities, and has secured favorable pricing on such investments as compared to the relevant peer group of passive investment managers.
- Of the five GFOA recommended best practices, the ASRS follows all, except designating an individual or group responsible for negotiating fees and reporting before any agreement is signed.

o **Recommendations**

Task 3.c: Compare the ASRS' processes and other controls over setting external investment manager fees to best practices, including but not limited to industry standards
Recommendation: The ASRS procedures are well aligned with best practices with the exception of having a dedicated fee negotiation team that must report on all proposed investments before a deal is executed. Gallagher recommends implementing a formal report on fee negotiations to be completed prior to the execution of each investment agreement.

d. Identify the reasons for and impact of any inadequate processes or other controls;

o **Observations**

- While there are opportunities for improvement outlined in the recommendations of this report, Gallagher does not consider the current processes or other controls employed by the ASRS to be inadequate.
- In order to evaluate the impact of any inadequate processes and controls, Gallagher has compared the current investment manager fees with a third-party database (eVestment Alliance) that includes a peer universe fee calculation based on investment style and size.
  - While the majority of investments in traditional asset classes have secured favorable fee arrangements, several are above the median level for the asset class given the size of the mandate.
  - These investments do not necessarily indicate a failure of procedure, as long as fees were negotiated to the best of the team's ability and the assessment was made that the manager's potential to add value relative to its benchmark was likely to justify the above-median expense.

- All but one of the managers with at least one year of performance have exceeded their respective benchmark net of fees since the investment was made. The one exception has only been in the portfolio for 18 months at the time of this analysis.

- **Recommendations**

Task 3.d: Identify the reasons for and impact of any inadequate processes or other controls
Recommendation: Gallagher recommends the documentation of fee negotiations should include acknowledgement of where the manager fee ranks compared to an appropriate peer group. Above-median fees should be justified by the perceived ability of the manager to add value over the appropriate benchmark.

e. Make recommendations for improving how the ASRS accepts and/or negotiates external investment manager fees, as appropriate.

Please see each individual section for specific recommendations.

Section III: Background and Methodology

Background Information

The Arizona State Retirement System (the ASRS) provides defined benefit (pension) and supplemental retirement plans, health insurance, long-term disability benefits, and survivor benefits to employees of the State, counties, municipalities, universities, community colleges, school districts, and other political entities. It also provides health insurance for retirees.
In this report, Gallagher will have the following references as it relates to the Operation Performance Audit and Sunset Review:

1. The agency, the Arizona State Retirement System, will be referred to as "the ASRS";
2. The retirement plan "ASRS plan";
3. The trustees "ASRS board" for the first instance, and "Board" for subsequent mentions;
4. The Trust or the Investment Portfolio we use "the Fund".

Arthur J. Gallagher & Co., an international insurance brokerage and risk management services firm, is headquartered in Itasca, Illinois, has operations in 30 countries and offers client service capabilities in approximately 140 countries around the world through a network of correspondent brokers and consultants. Gallagher Fiduciary Advisors, LLC (Gallagher) specializes in evaluating the organizational governance, day-to-day administration and investment programs of investment boards and pension systems using combined expertise in investment practices, pension fund administration, and fiduciary responsibility. In operation for over 20 years, Gallagher has performed similar evaluations for numerous other public and private pension funds, and is recognized as the leading firm in the industry performing this type of consulting services.

The specific details, scope, and depth of the review are defined by the December 1, 2014 agreement, between the Arizona Office of the Auditor General and Gallagher. Throughout the report, as part of our operational review, we identify and highlight our findings or observations and provide recommendations. We note that our comments are limited by the scope of work and we were not tasked with reviewing all areas of the investment program. Where appropriate, for each Task Area, we provide supplemental background information in addition to our findings and recommendations. The background sections may also include what we have deemed an industry "best practice" based on our experience performing similar reviews. A "best practice" is not necessarily the "norm" or most common practice, rather it is the most effective and efficient means (e.g., a process, procedure or structure) of doing something in a given situation to achieve an optimal outcome. Since effectiveness and efficiency are situational, what is a best practice for one operation may not be a best practice for all operations.

The analysis leading up to this report progressed through the following stages:

Document Collection
The first stage in our process was collection – with the ASRS' cooperation – of information regarding the ASRS' investment practices and performance. This included amassing data and documents, such as written investment policies and guidelines, investment performance reports, service provider contracts, and other materials. This phase was conducted primarily between November 2014 and February 2015.

Analysis & Interviews

The next stage of our process, which continued throughout the project, was analysis. Throughout the process, we coordinated and integrated our efforts and maintained communication with designated representatives. The main interviews with the ASRS were conducted during document procurement and in preparation for the preliminary draft.

Summary of Recommendations

Task 1.b: Compare the ASRS' investment strategies and objectives to best practice, including but not limited to industry standards

Recommendation:

1. The ASRS should continue to maintain and update an investment policy statement (IPS) for the Fund.

2. The assumed actuarial interest rate has not changed over the last ten fiscal years; Gallagher recommends that the ASRS discuss the 8.0% actuarial rate annually with the actuary to ensure that it is appropriate given current asset allocation and projected rates of return**.** ASRS should maintain a long-term perspective to avoid unwarranted changes to the actuarial rate.

Task 1.c: Determine the processes the ASRS uses to monitor how well its investment strategies and objectives are performing and guide it toward meeting its expected rates of return

Recommendation:

Gallagher recommends that the ASRS ask NEPC to include consecutive calendar year performance for the most recent ten years in the quarterly IPR.

Task 1.h: Determine the causes for any underperformance, including any procedures or requirements that limit the ASRS' investment strategies

Recommendation:

The ASRS should continue to monitor performance of the Fund and the underlying strategies, including adjusting its asset allocation and restructure asset classes as appropriate and reasonable.

Task 2.a: Identify the processes and other controls the ASRS uses for selecting, developing terms and conditions for, monitoring, and valuing investments, and terminating alternative investment manager contracts

Recommendations:

1. Gallagher recommends that the ASRS conduct a thorough review and update of the Strategic Investment Policy at least annually (and more frequently if needed). The current version has been in place for more than 2 years.

2. In order to gain additional confidence in valuations, the ASRS should sample a greater number of partnerships. Sampling should include sufficient partnerships to represent at least 50% of the market value of the total alternative investment portfolio.

Task 2.b: Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014

Recommendations:

1. Gallagher recommends including sourcing information and screening criteria in the final investment memo for each partnership. These are active parts of the investment process. It would also be beneficial to document where each opportunity came from and what characteristics drove the team to undertake additional due diligence.

Task 2.b: Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014

2. Gallagher recommends that all specialty consultants adopt Meketa's practice of incorporating the due diligence checklist, as presented in Appendix 1 of SIP006, into their recommendations. The checklist provides a tangible record that the due diligence has been performed as prescribed by the consultant, which should give the Private Markets Committee additional confidence in considering the recommendations made by the consultant. Making the checklist a standard practice will also help to ensure consistency across the evaluation of each potential investment.

3. The ASRS should continue the independent reviews of Asset Class Committee meetings by NEPC. Record NEPC's reviews in a single document for ease of review and monitoring. NEPC's independent verification that the process has been followed for each investment serves as an important check and balance to ensure that every investment has been vetted properly.

Task 2.c: Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts

Recommendations:

1. The ASRS should continue to utilize both firms in the legal review of fund terms and documents, as appropriate.

2. While both firms' have appeared to serve the ASRS well, a documented, periodic review of each service provider can help ensure that the firms continue to serve in the best interest of the Plan. We recommend that such a review be conducted at least every three years.

Task 2.d: Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices, including but not limited to industry standards

Recommendations:

1. As listed in Section 2.b, Gallagher recommends the inclusion of sourcing and screening information in final due diligence materials on each fund.

2. A periodic review of all service providers (both investment advisors and legal representation) would help to ensure that the ASRS continues to receive high-quality guidance and advice at a reasonable cost. We recommend that these reviews be conducted at least every three years.

Task 3.a: Identify the processes and other controls the ASRS uses for accepting and/or negotiating external investment manager fees

Recommendation:

The ASRS has a well-considered approach to negotiating investment fees that should be equally well articulated in the documented procedures for selecting investment managers. Gallagher recommends adding an Appendix to SIP006 that explicitly outlines the objectives and preferences for fee negotiations.

Task 3.b: Determine whether the ASRS used the identified processes and controls for accepting and/or negotiating external investment manager fees for contracts the ASRS entered into during fiscal years 2005 through 2014
Recommendation: The documented procedures mentioned in Section 3.a should include a standard method for documentation of fee negotiations. The documentation should include, at a minimum, the proposed fees from the manager before negotiation, the ASRS proposed fee structure, the final agreement, and be signed by the person(s) responsible for the negotiation.

Task 3.c: Compare the ASRS' processes and other controls over setting external investment manager fees to best practices, including but not limited to industry standards
Recommendation: The ASRS procedures are well aligned with best practices with the exception of having a dedicated fee negotiation team that must report on all proposed investments before a deal is executed. Gallagher recommends implementing a formal report on fee negotiations to be completed prior to the execution of each investment agreement.

Task 3.d: Identify the reasons for and impact of any inadequate processes or other controls
Recommendation: Gallagher recommends the documentation of fee negotiations should include acknowledgement of where the manager fee ranks compared to an appropriate peer group. Above-median fees should be justified by the perceived ability of the manager to add value over the appropriate benchmark.

Disclosures

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Alternative investments sometimes lack liquidity, lack diversification, are not subject to the same regulatory requirements as other traditional investments, may involve complex tax structures and delays in distributing important tax information, and may involve substantial fees. Alternatives may involve leverage, short selling and/or derivatives. These products often execute trades on non-U.S. exchanges. Investing in foreign markets may entail risks that differ from those associated with investments in U.S. markets. These investments may not be appropriate for all investors.

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Independent Operational Review of the Arizona State Retirement System's (ASRS) Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers

Appendices

Appendix 1.e:

Determine whether the ASRS met its overall expected rates of return during the past 10 fiscal years

Exhibit 1:

Arizona State Retirement System
As of June 30, 2014

	Performance(%)									
	Jul-2013 To Jun-2014	Jul-2012 To Jun-2013	Jul-2011 To Jun-2012	Jul-2010 To Jun-2011	Jul-2009 To Jun-2010	Jul-2008 To Jun-2009	Jul-2007 To Jun-2008	Jul-2006 To Jun-2007	Jul-2005 To Jun-2006	Jul-2004 To Jun-2005
Total Fund	18.55	13.12	1.33	24.62	14.80	-18.65	-7.49	17.68	9.98	8.45
Interim SAA Policy	*17.83*	*12.60*	*1.30*	*24.35*	*13.13*	*-19.11*	*-5.68*	*18.59*	*8.80*	*7.79*
Total Fund without Global TAA	18.24	13.06	1.12	24.23	14.53	-18.81	-7.57	17.94	10.00	8.40
Interim SAA Policy	*17.83*	*12.60*	*1.30*	*24.35*	*13.13*	*-19.11*	*-5.68*	*18.59*	*8.80*	*7.79*
Total Public Markets Fixed Income	7.33	2.29	6.88	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ASRS Custom Public Mkts Fix. Inc.	*6.02*	*-0.24*	*7.50*	*4.06*	*9.50*	*6.05*	*7.13*	*6.12*	*-0.81*	*6.80*
Total Core Fixed Income	4.41	-0.56	7.87	3.82	11.22	5.98	6.66	6.09	-0.44	6.90
Barclays Aggregate Index	*4.37*	*-0.69*	*7.47*	*3.90*	*9.50*	*6.05*	*7.12*	*6.12*	*-0.80*	*6.81*
Total High Yield Fixed Income	11.11	8.78	7.54	14.71	N/A	N/A	N/A	N/A	N/A	N/A
Barclays U.S. High Yield	*11.73*	*9.49*	*7.27*	*15.63*	*26.77*	*-2.40*	*-2.26*	*11.55*	*4.81*	*10.86*
Total Emerging Market Debt	4.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JPM GBI-EM Global Diversified	*3.91*	*1.32*	*-1.69*	*19.67*	*15.48*	*0.52*	*11.80*	*25.70*	*3.85*	*23.77*
Total Domestic and International Equity	23.28	18.83	-1.93	32.15	15.46	-26.21	-12.11	21.71	13.29	8.87
ASRS Custom Total Equity	*23.69*	*19.18*	*-2.15*	*32.48*	*14.65*	*-27.35*	*-10.59*	*23.94*	*12.48*	*8.02*
Total Dom and Int'l Eq ex-Equity Risk Factor	23.27	18.82	-1.93	32.15	15.46	-26.21	-12.11	21.71	13.29	8.87
ASRS Custom Total Equity	*23.69*	*19.18*	*-2.15*	*32.48*	*14.65*	*-27.35*	*-10.59*	*23.94*	*12.48*	*8.02*
Total Domestic Equity	24.65	22.21	2.84	33.83	17.83	-25.22	-12.55	19.68	10.00	8.14
ASRS Custom Domestic Equity	*24.89*	*21.98*	*3.68*	*32.75*	*17.00*	*-26.23*	*-12.56*	*21.56*	*8.63*	*6.33*
Total Large Cap Equity	24.18	20.13	4.74	31.41	14.76	-25.30	-13.31	19.96	9.09	6.90
S&P 500 Index	*24.61*	*20.60*	*5.45*	*30.69*	*14.43*	*-26.21*	*-13.12*	*20.59*	*8.63*	*6.32*
Total Mid Cap Equity	26.62	25.41	-3.25	38.15	23.72	-26.58	-7.41	19.04	12.35	14.71
S&P MidCap 400	*25.24*	*25.18*	*-2.33*	*39.38*	*24.93*	*-28.02*	*-7.34*	*18.51*	*12.98*	*14.03*
Total Small Cap Equity	24.85	28.00	0.17	38.14	23.89	-24.15	-14.07	17.71	13.41	10.23
ASRS Custom Sm Cap Eq Blended	*25.54*	*25.19*	*1.43*	*37.03*	*23.64*	*-25.31*	*-14.67*	*18.74*	*14.56*	*9.45*

Performance returns are net of fees

Exhibit 1 Continued:

Arizona State Retirement System
As of June 30, 2014

	Performance(%)									
	Jul-2013 To Jun-2014	Jul-2012 To Jun-2013	Jul-2011 To Jun-2012	Jul-2010 To Jun-2011	Jul-2009 To Jun-2010	Jul-2008 To Jun-2009	Jul-2007 To Jun-2008	Jul-2006 To Jun-2007	Jul-2005 To Jun-2006	Jul-2004 To Jun-2005
Total International Equity	21.32	13.98	-12.85	28.90	9.17	-28.46	-10.92	27.90	24.35	11.07
ASRS Custom Int'l Eq	*21.99*	*15.13*	*-13.86*	*30.81*	*10.88*	*-30.54*	*-6.20*	*30.15*	*26.80*	*14.13*
Total Int'l Developed Markets Equity	23.63	18.71	-12.95	31.20	9.53	-28.46	-10.92	27.90	24.35	11.07
ASRS Custom Int'l Dev Mkts Eq	*24.65*	*19.53*	*-13.55*	*31.61*	*10.88*	*-30.54*	*-6.20*	*30.15*	*26.80*	*14.13*
Total Int'l Emerging Markets Equity	15.88	4.33	-14.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MSCI Em Mkts	*14.49*	*3.23*	*-15.66*	*28.17*	*23.48*	*-27.82*	*4.89*	*45.45*	*35.90*	*34.89*
Total Private Equity	17.78	12.61	15.43	17.06	17.89	-33.89	-3.97	0.00	N/A	N/A
Russell 2000 1QTR Lagged	*24.90*	*16.30*	*-0.18*	*25.79*	*62.76*	*-37.50*	*-13.00*	*5.91*	*25.85*	*5.41*
Total Opportunistic Equity	37.88	41.12	-0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Inflation-Linked Assets	10.13	-5.03	-13.67	17.27	N/A	N/A	N/A	N/A	N/A	N/A
ASRS Custom Inf-Linked	*8.21*	*-8.01*	*-14.32*	*14.10*	*9.52*	*-1.11*	*15.09*	*3.99*	*-1.64*	*9.33*
Total Commodities	10.13	-5.01	-13.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bloomberg Commodity Index Total Return	*8.21*	*-8.01*	*-14.32*	*25.91*	*2.75*	*-47.08*	*41.56*	*2.94*	*18.09*	*8.56*
Total Real Estate	13.70	12.81	12.32	16.64	1.16	-37.19	-7.03	29.43	N/A	N/A
NCREIF ODCE 1QTR Lagged (net)	*12.74*	*9.68*	*13.59*	*19.01*	*-18.75*	*-23.98*	*12.00*	*15.35*	*N/A*	*N/A*
Total Farmland and Timber	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CPI Less Food & Energy 1QTR Lagged + 350bps	*5.20*	*5.45*	*5.83*	*4.74*	*4.68*	*5.34*	*5.97*	*6.09*	*5.67*	*5.93*
Total GTAA	21.23	12.69	2.38	28.58	17.90	-15.61	-5.81	15.79	9.54	8.86
ASRS Custom GTAA	*17.88*	*12.80*	*2.07*	*22.94*	*12.09*	*-18.41*	*-7.11*	*17.48*	*8.72*	*7.79*
Total Private Debt	14.95	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S&P LSTA/Leveraged Loan Index + 2.5%	*6.97*	*10.56*	*5.41*	*10.52*	*48.00*	*-15.31*	*-3.35*	*9.46*	*8.31*	*7.59*
Total Opportunistic Debt	9.61	12.37	2.89	18.59	39.04	-16.19	-2.22	0.00	N/A	N/A

Performance returns are net of fees

Exhibit 2:

Arizona State Retirement System
As of June 30, 2014

	Performance(%)					
	1 Quarter	1 Year	3 Years	5 Years	7 Years	10 Years
Total Fund	3.91	18.55	10.76	14.22	5.59	7.46
Interim SAA Policy	*3.50*	*17.83*	*10.36*	*13.59*	*5.38*	*7.21*
Total Fund without Global TAA	3.75	18.24	10.57	13.97	5.38	7.34
Interim SAA Policy	*3.50*	*17.83*	*10.36*	*13.59*	*5.38*	*7.21*
Total Public Markets Fixed Income	2.64	7.33	5.47	N/A	N/A	N/A
ASRS Custom Public Mkts Fix. Inc.	*2.48*	*6.02*	*4.37*	*5.31*	*5.68*	*5.16*
Total Core Fixed Income	2.02	4.41	3.85	5.27	5.57	5.14
Barclays Aggregate Index	*2.04*	*4.37*	*3.66*	*4.85*	*5.35*	*4.93*
Total High Yield Fixed Income	2.21	11.11	9.13	N/A	N/A	N/A
Barclays U.S. High Yield	*2.41*	*11.73*	*9.48*	*13.98*	*9.06*	*9.05*
Total Emerging Market Debt	4.29	4.62	N/A	N/A	N/A	N/A
JPM GBI-EM Global Diversified	*4.02*	*3.91*	*1.16*	*7.42*	*7.02*	*10.01*
Total Domestic and International Equity	4.57	23.28	12.84	17.00	5.15	7.88
ASRS Custom Total Equity	*4.58*	*23.69*	*12.99*	*16.98*	*5.17*	*7.92*
Total Dom and Int'l Eq ex-Equity Risk Factor	4.57	23.27	12.83	16.99	5.15	7.87
ASRS Custom Total Equity	*4.58*	*23.69*	*12.99*	*16.98*	*5.17*	*7.92*
Total Domestic Equity	4.73	24.65	16.14	19.83	7.10	8.69
ASRS Custom Domestic Equity	*4.64*	*24.89*	*16.46*	*19.66*	*6.78*	*8.31*
Total Large Cap Equity	5.14	24.18	16.04	18.70	6.22	7.88
S&P 500 Index	*5.23*	*24.61*	*16.58*	*18.83*	*6.16*	*7.78*
Total Mid Cap Equity	4.91	26.62	15.39	21.30	8.63	10.60
S&P MidCap 400	*4.33*	*25.24*	*15.26*	*21.67*	*8.57*	*10.50*
Total Small Cap Equity	2.58	24.85	16.98	22.33	8.64	10.14
ASRS Custom Sm Cap Eq Blended	*2.07*	*25.54*	*16.81*	*21.98*	*8.07*	*9.87*

Performance returns are net of fees

Exhibit 2 Continued:

Arizona State Retirement System
As of June 30, 2014

	Performance(%)					
	1 Quarter	1 Year	3 Years	5 Years	7 Years	10 Years
Total International Equity	4.34	21.32	6.42	11.14	1.12	6.68
ASRS Custom Int'l Eq	*4.48*	*21.99*	*6.55*	*11.90*	*1.93*	*7.97*
Total Int'l Developed Markets Equity	3.49	23.63	8.51	12.92	2.27	7.53
ASRS Custom Int'l Dev Mkts Eq	*3.73*	*24.65*	*8.80*	*13.45*	*2.94*	*8.72*
Total Int'l Emerging Markets Equity	6.90	15.88	1.15	N/A	N/A	N/A
MSCI Em Mkts	*6.60*	*14.49*	*-0.11*	*9.54*	*2.57*	*12.28*
Total Private Equity	2.75	17.78	15.25	16.14	4.28	N/A
Russell 2000 1QTR Lagged	*1.12*	*24.90*	*13.18*	*24.31*	*7.08*	*8.53*
Total Opportunistic Equity	4.80	37.88	24.68	N/A	N/A	N/A
Total Inflation-Linked Assets	1.90	10.13	-3.34	N/A	N/A	N/A
ASRS Custom Inf-Linked	*0.08*	*8.21*	*-5.17*	*1.28*	*2.80*	*3.10*
Total Commodities	1.90	10.13	-3.28	N/A	N/A	N/A
Bloomberg Commodity Index Total Return	*0.08*	*8.21*	*-5.17*	*1.99*	*-2.69*	*0.87*
Total Real Estate	2.41	13.70	12.94	11.19	-0.11	N/A
NCREIF ODCE 1QTR Lagged (net)	*2.29*	*12.74*	*11.99*	*6.31*	*2.10*	*N/A*
Total Farmland and Timber	0.32	N/A	N/A	N/A	N/A	N/A
CPI Less Food & Energy 1QTR Lagged + 350bps	*1.32*	*5.20*	*5.49*	*5.18*	*5.32*	*5.49*
Total GTAA	5.17	21.23	11.83	16.22	7.74	8.81
ASRS Custom GTAA	*3.85*	*17.88*	*10.72*	*13.34*	*5.11*	*6.92*
Total Private Debt	2.68	14.95	N/A	N/A	N/A	N/A
S&P LSTA/Leveraged Loan Index + 2.5%	*1.82*	*6.97*	*7.63*	*15.32*	*7.60*	*7.85*
Total Opportunistic Debt	3.18	9.61	8.22	15.88	7.99	N/A

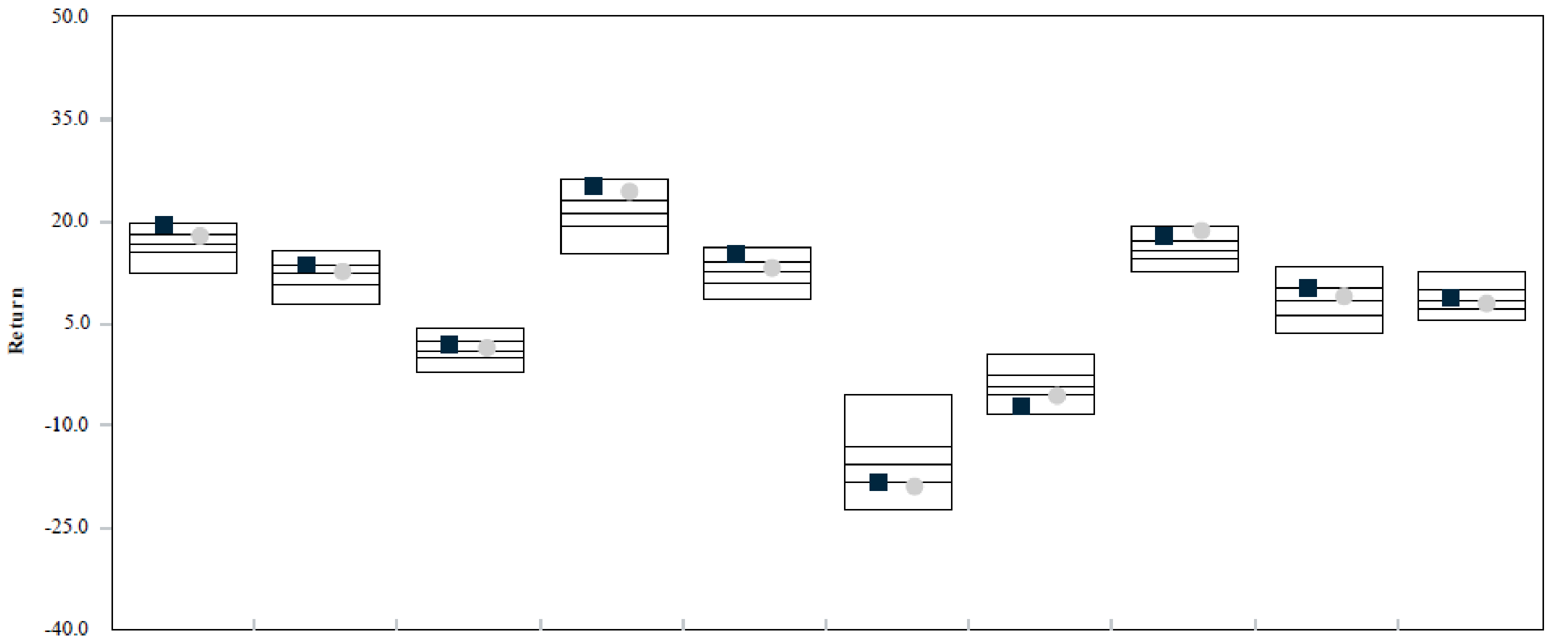
Performance returns are net of fees

Appendix 1.g:

Compare the ASRS' investment performance to peer retirement systems' performance

Exhibit 1:

Arizona State Retirement System
All Public Plans-Total Fund
As of June 30, 2004

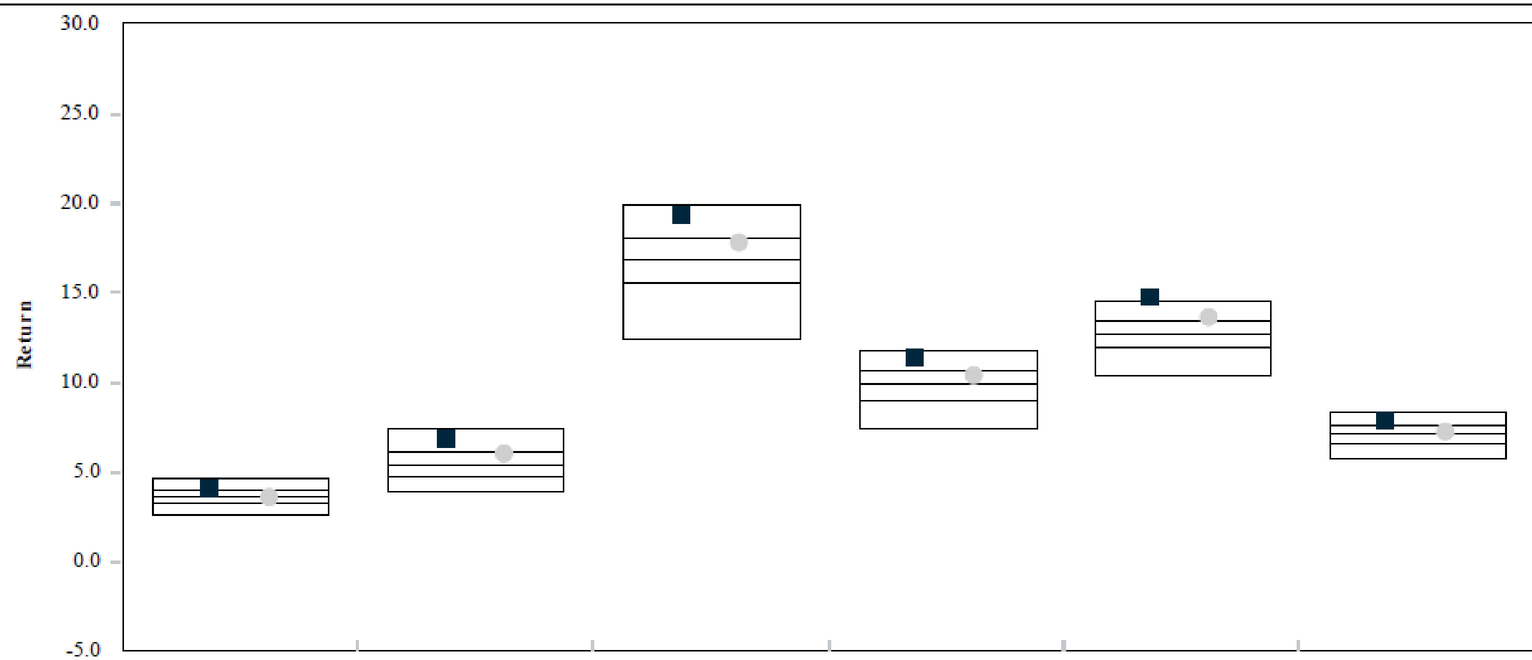


	Jul-2013 To Jun-2014	Jul-2012 To Jun-2013	Jul-2011 To Jun-2012	Jul-2010 To Jun-2011	Jul-2009 To Jun-2010	Jul-2008 To Jun-2009	Jul-2007 To Jun-2008	Jul-2006 To Jun-2007	Jul-2005 To Jun-2006	Jul-2004 To Jun-2005
■ Total Fund	19.31 (11)	13.76 (23)	1.81 (34)	25.14 (9)	15.15 (13)	-18.44 (77)	-7.28 (91)	17.90 (17)	10.14 (27)	8.60 (47)
● Interim SAA Policy	17.83 (30)	12.60 (45)	1.30 (45)	24.35 (12)	13.13 (42)	-19.11 (81)	-5.68 (78)	18.59 (11)	8.80 (46)	7.79 (62)
5th Percentile	19.92	15.64	4.28	26.26	16.26	-5.57	0.55	19.43	13.39	12.54
1st Quartile	18.05	13.62	2.25	23.08	14.15	-13.07	-2.60	17.24	10.33	10.04
Median	16.85	12.34	1.02	21.23	12.68	-15.64	-4.22	15.74	8.48	8.33
3rd Quartile	15.59	10.81	-0.01	19.43	11.03	-18.22	-5.51	14.57	6.30	7.00
95th Percentile	12.44	7.92	-2.11	15.10	8.62	-22.41	-8.27	12.49	3.59	5.54
Population	513	511	522	526	512	453	410	308	287	276

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 2:

Arizona State Retirement System
All Public Plans-Total Fund
As of June 30, 2014

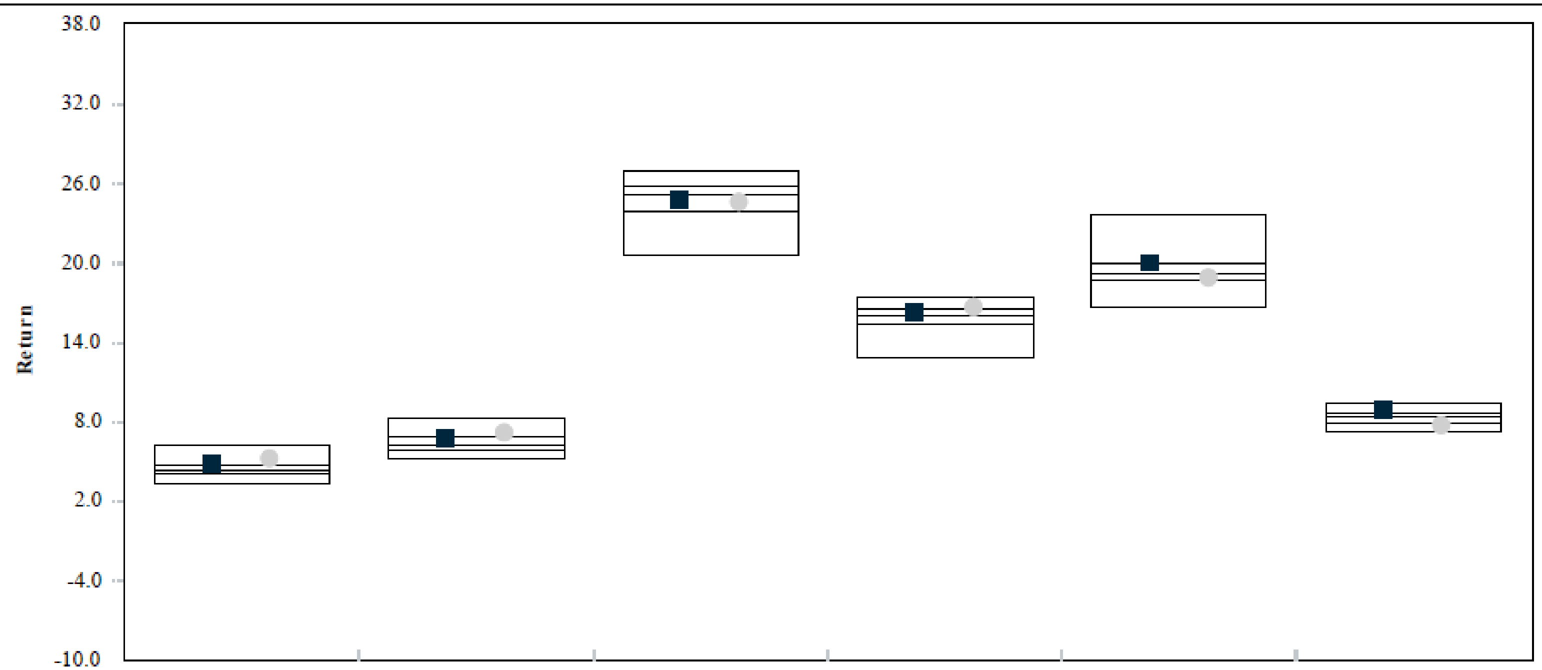


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
Total Fund	4.08 (22)	6.79 (10)	19.31 (11)	11.38 (10)	14.77 (4)	7.82 (16)
Interim SAA Policy	3.50 (62)	5.98 (28)	17.83 (30)	10.36 (36)	13.59 (20)	7.21 (45)
5th Percentile	4.62	7.39	19.92	11.75	14.52	8.35
1st Quartile	3.99	6.05	18.05	10.71	13.44	7.60
Median	3.63	5.40	16.85	9.93	12.75	7.14
3rd Quartile	3.28	4.81	15.59	9.06	11.98	6.63
95th Percentile	2.63	3.85	12.44	7.43	10.32	5.76
Population	525	523	513	491	460	339

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 3:

Arizona State Retirement System
All Public Plans-US Equity Segment
As of June 30, 2014

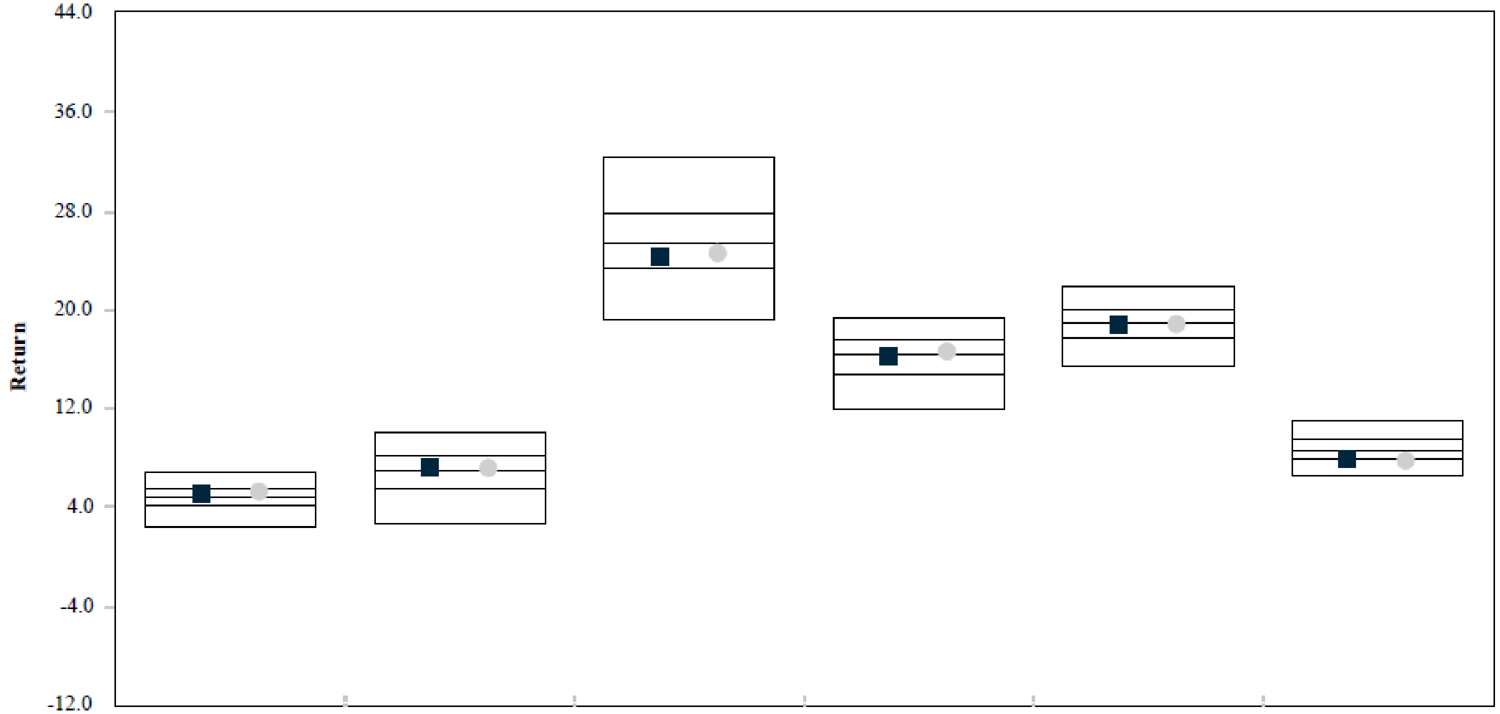


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Domestic Equity	4.76 (27)	6.68 (38)	24.81 (53)	16.30 (37)	19.98 (25)	8.82 (22)
● S&P 500 Index	5.23 (11)	7.14 (12)	24.61 (59)	16.58 (24)	18.83 (69)	7.78 (76)
5th Percentile	6.38	8.25	26.92	17.47	23.69	9.34
1st Quartile	4.86	6.87	25.85	16.53	19.97	8.73
Median	4.41	6.37	25.11	16.11	19.32	8.37
3rd Quartile	4.13	5.85	23.96	15.35	18.77	7.80
95th Percentile	3.44	5.22	20.68	12.95	16.62	7.24
Population	87	85	82	75	61	36

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 4:

Arizona State Retirement System
IM U.S. Large Cap Equity (SA+CF)
As of June 30, 2014

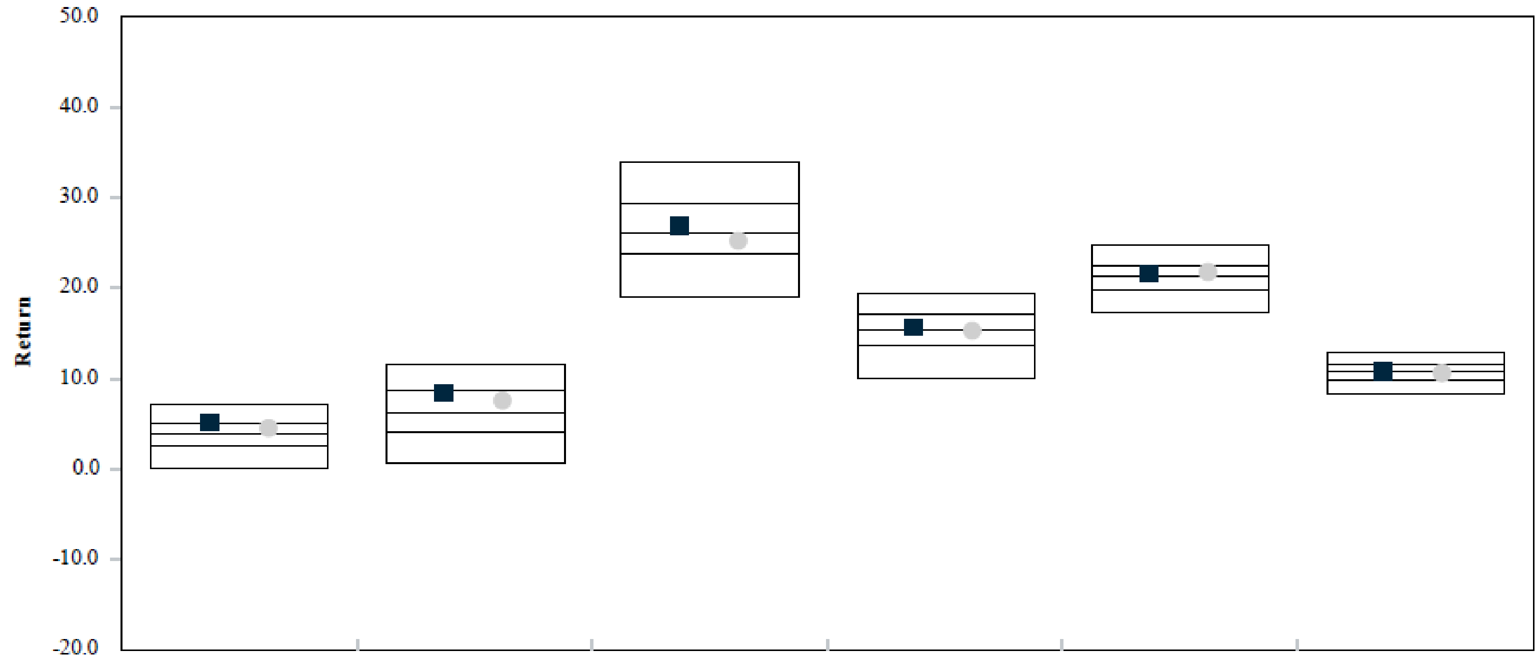


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Large Cap Equity	5.15 (38)	7.14 (45)	24.25 (67)	16.12 (59)	18.77 (55)	7.95 (75)
● S&P 500 Index	5.23 (34)	7.14 (45)	24.61 (63)	16.58 (47)	18.83 (53)	7.78 (81)
5th Percentile	6.80	10.17	32.35	19.46	21.86	11.02
1st Quartile	5.48	8.13	27.76	17.65	19.94	9.49
Median	4.87	6.96	25.44	16.50	18.94	8.60
3rd Quartile	4.14	5.56	23.33	14.88	17.77	7.92
95th Percentile	2.41	2.79	19.18	11.97	15.45	6.54

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 5:

Arizona State Retirement System
IM U.S. Mid Cap Equity (SA+CF)
As of June 30, 2014

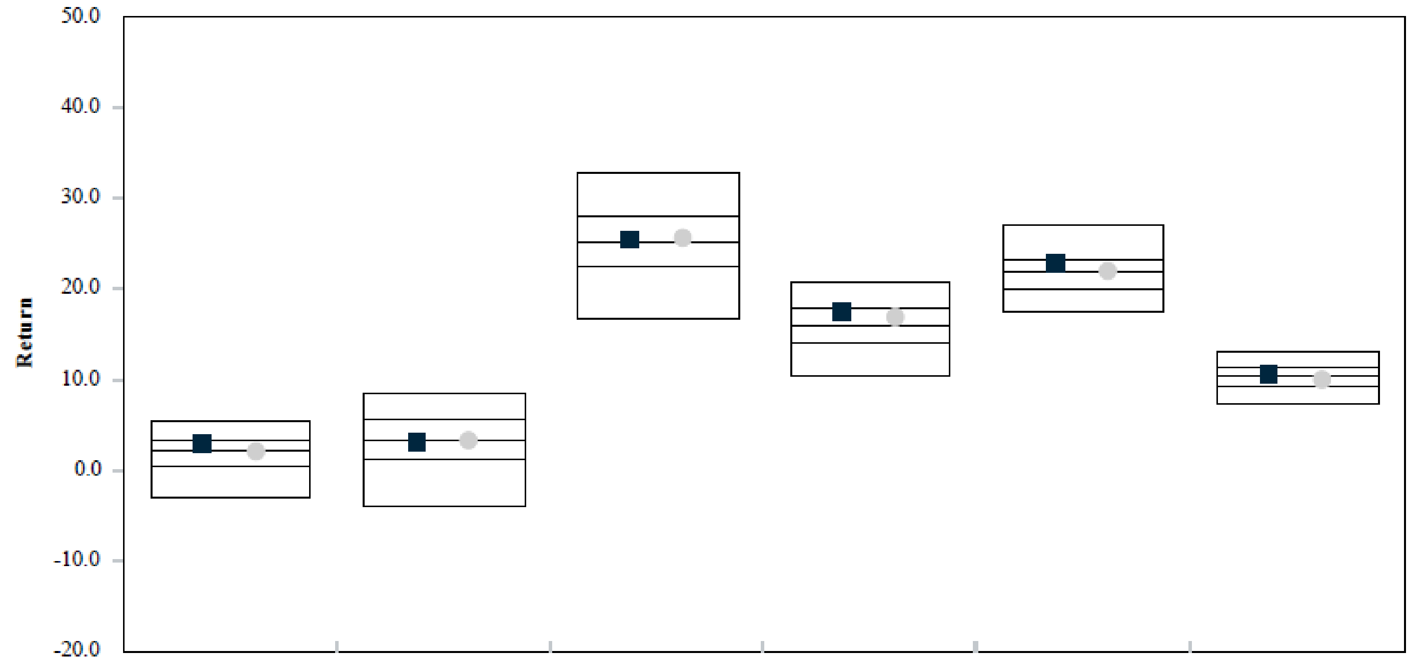


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Mid Cap Equity	4.96 (25)	8.18 (29)	26.84 (46)	15.60 (47)	21.50 (46)	10.78 (47)
● S&P MidCap 400	4.33 (40)	7.50 (38)	25.24 (60)	15.26 (53)	21.67 (43)	10.50 (61)
5th Percentile	7.00	11.48	33.99	19.58	24.67	12.97
1st Quartile	4.94	8.67	29.52	17.02	22.55	11.60
Median	3.81	6.23	26.12	15.32	21.34	10.67
3rd Quartile	2.62	4.03	23.83	13.47	19.85	9.98
95th Percentile	0.12	0.52	18.99	10.17	17.15	8.36
Population	235	235	235	224	213	157

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 6:

Arizona State Retirement System
IM U.S. Small Cap Equity (SA+CF)
As of June 30, 2014

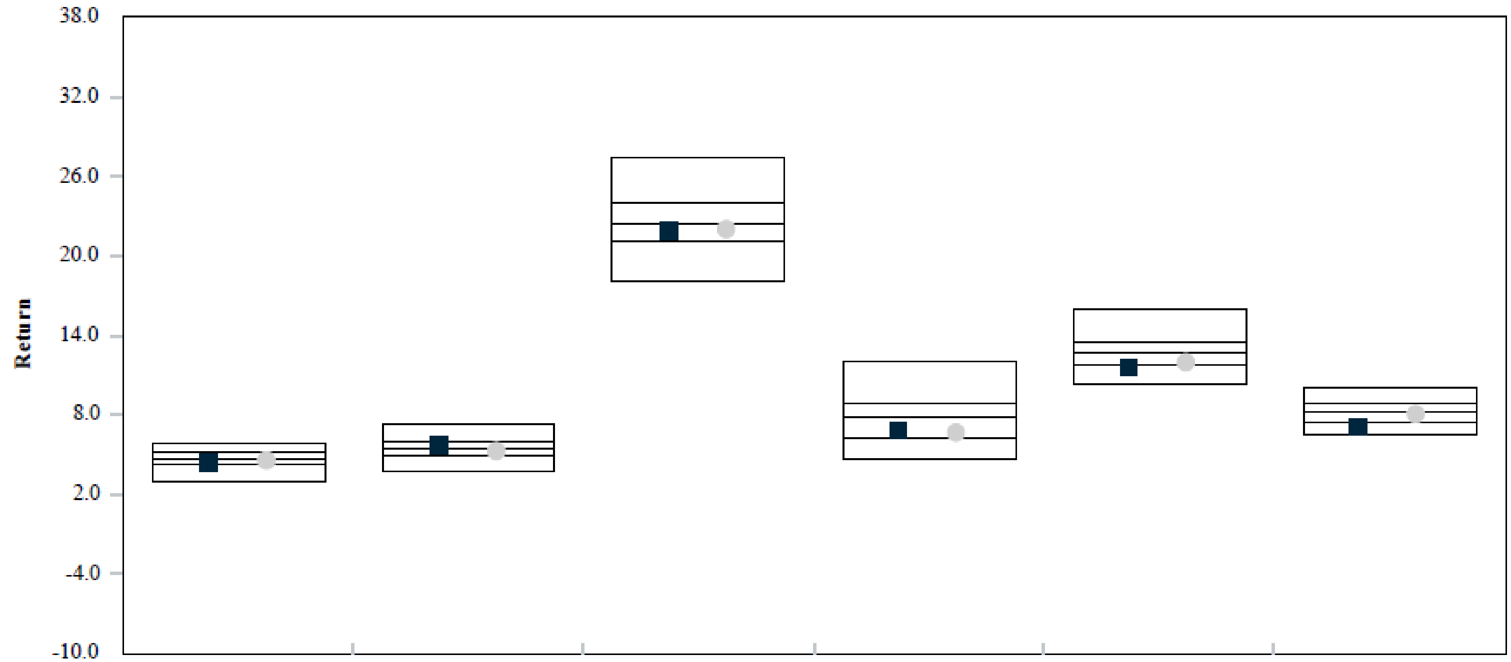


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Small Cap Equity	2.70 (39)	3.04 (56)	25.35 (49)	17.45 (29)	22.78 (35)	10.49 (45)
● ASRS Custom Sm Cap Eq Blended	2.07 (54)	3.22 (54)	25.54 (47)	16.81 (38)	21.98 (45)	9.87 (62)
5th Percentile	5.42	8.39	33.01	20.65	26.99	13.27
1st Quartile	3.44	5.58	28.05	17.80	23.43	11.43
Median	2.14	3.50	25.24	15.93	21.83	10.30
3rd Quartile	0.45	1.08	22.43	13.96	20.18	9.28
95th Percentile	-3.16	-3.90	16.84	10.38	17.49	7.33
Population	700	697	693	672	628	468

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 7:

Arizona State Retirement System
All Public Plans-Intl. Equity Segment
As of June 30, 2014

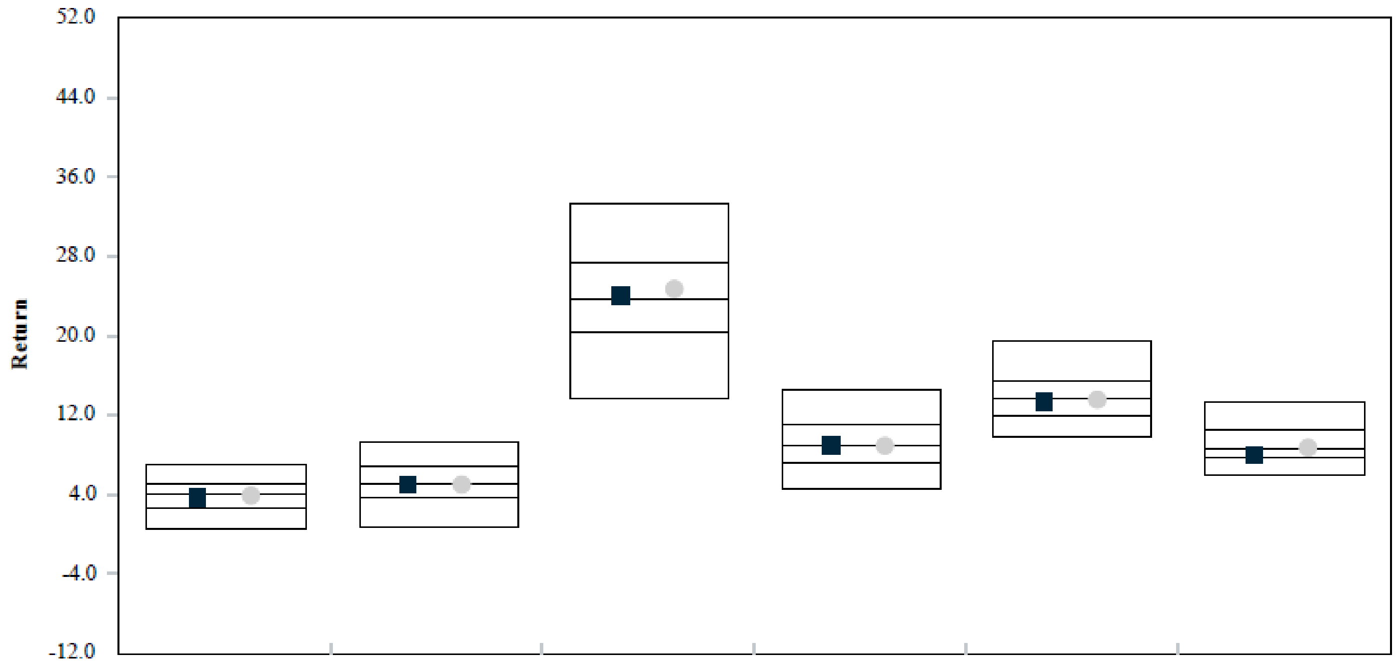


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total International Equity	4.43 (59)	5.58 (46)	21.75 (67)	6.79 (70)	11.52 (84)	7.04 (92)
● ASRS Custom Int'l Eq	4.48 (56)	5.26 (61)	21.99 (61)	6.55 (71)	11.90 (75)	7.97 (59)
5th Percentile	5.91	7.29	27.38	11.98	15.94	10.11
1st Quartile	5.18	6.11	24.11	8.83	13.49	8.88
Median	4.63	5.48	22.33	7.91	12.76	8.21
3rd Quartile	4.19	4.91	21.11	6.23	11.83	7.37
95th Percentile	2.96	3.81	18.11	4.59	10.31	6.51
Population	83	82	80	70	56	34

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 8:

Arizona State Retirement System
IM International Equity Developed Markets (SA+CF)
As of June 30, 2014

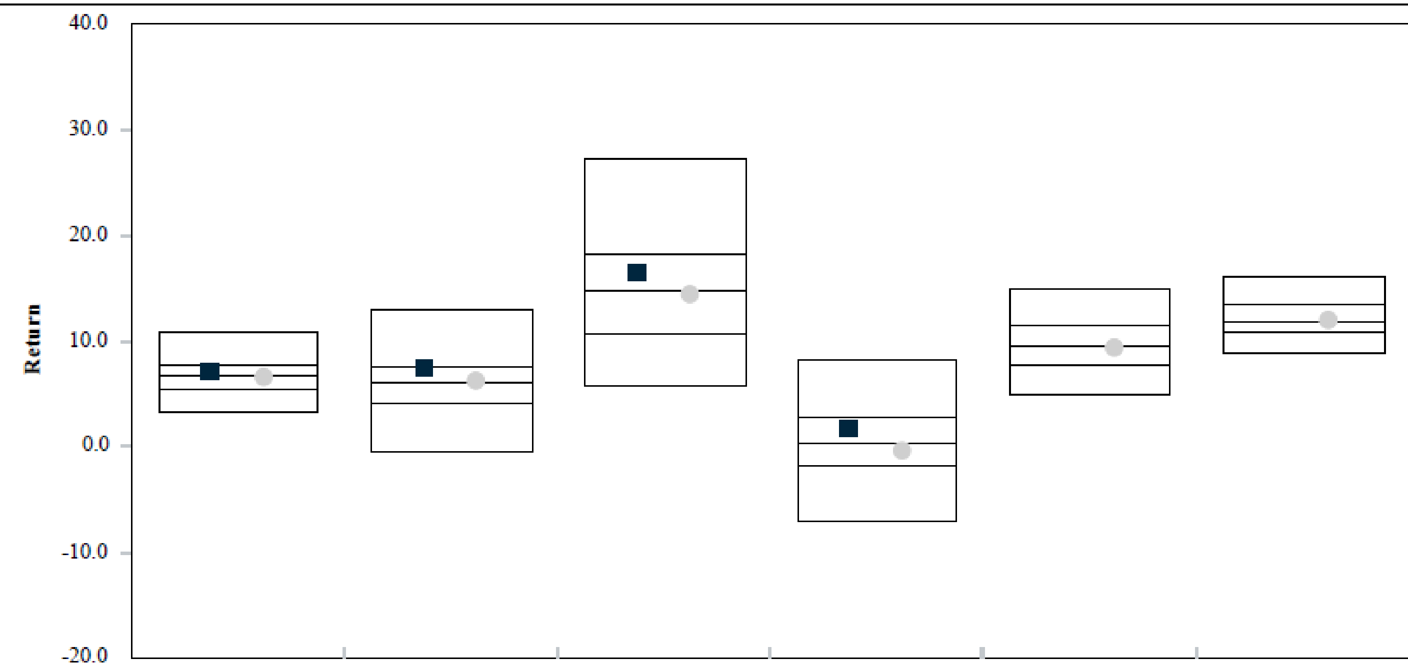


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Int'l Developed Markets Equity	3.57 (60)	5.00 (54)	23.98 (48)	8.82 (54)	13.27 (57)	7.87 (72)
● ASRS Custom Int'l Dev Mkts Eq	3.73 (57)	4.92 (55)	24.65 (42)	8.80 (55)	13.45 (52)	8.72 (51)
5th Percentile	6.96	9.45	33.36	14.67	19.36	13.31
1st Quartile	5.17	6.86	27.52	11.09	15.59	10.59
Median	4.09	5.17	23.70	9.00	13.61	8.73
3rd Quartile	2.77	3.57	20.46	7.20	11.98	7.67
95th Percentile	0.52	0.72	13.62	4.62	9.68	6.07
Population	639	639	635	597	563	378

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 9:

Arizona State Retirement System
IM Emerging Markets Equity (SA+CF+MF)
As of June 30, 2014

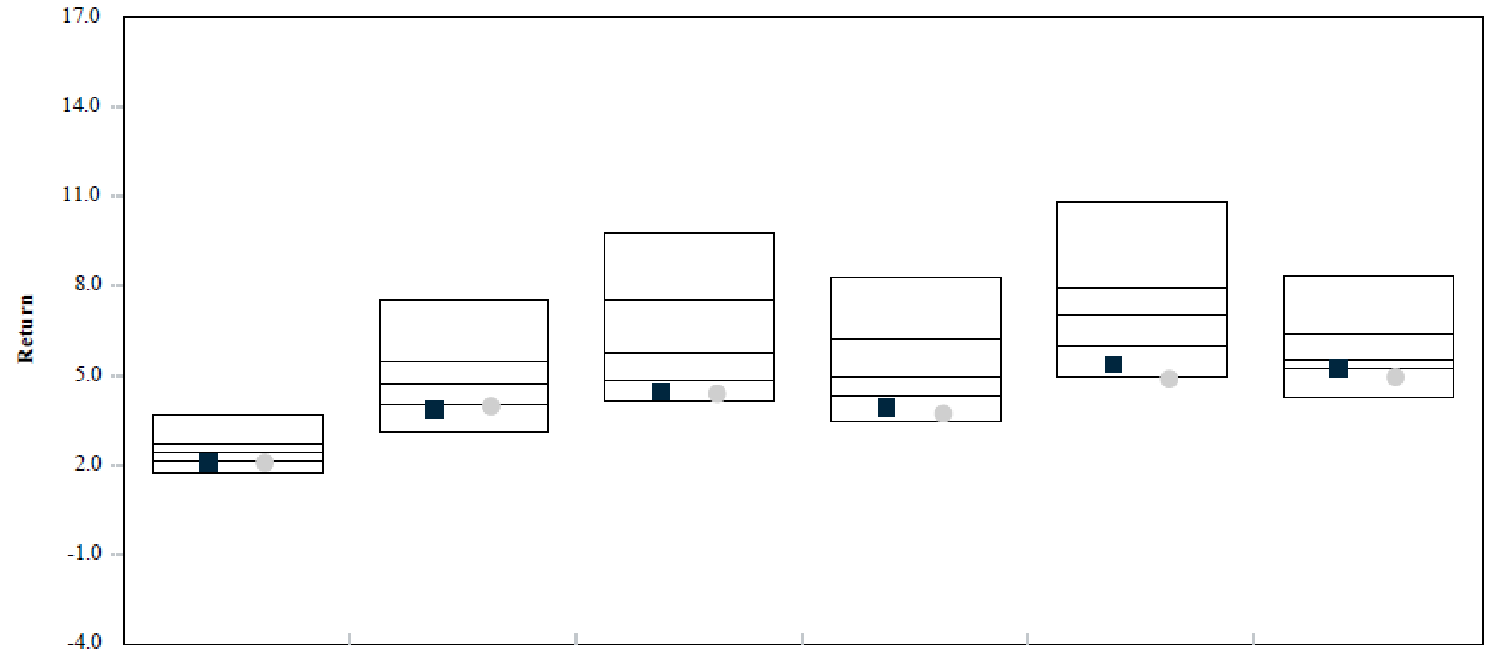


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Int'l Emerging Markets Equity	7.04 (43)	7.33 (29)	16.52 (36)	1.70 (35)	N/A	N/A
● MSCI Emerging Markets (Net)	6.60 (55)	6.14 (47)	14.31 (54)	-0.39 (59)	9.24 (54)	11.94 (48)
5th Percentile	10.87	12.90	27.31	8.25	14.87	16.04
1st Quartile	7.75	7.59	18.22	2.86	11.54	13.41
Median	6.73	5.90	14.68	0.18	9.49	11.82
3rd Quartile	5.43	4.13	10.73	-1.85	7.73	10.85
95th Percentile	3.20	-0.52	5.73	-7.12	4.96	8.72
Population	1,241	1,191	1,087	823	581	290

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 10:

Arizona State Retirement System
All Public Plans-US Fixed Income Segment
As of June 30, 2014

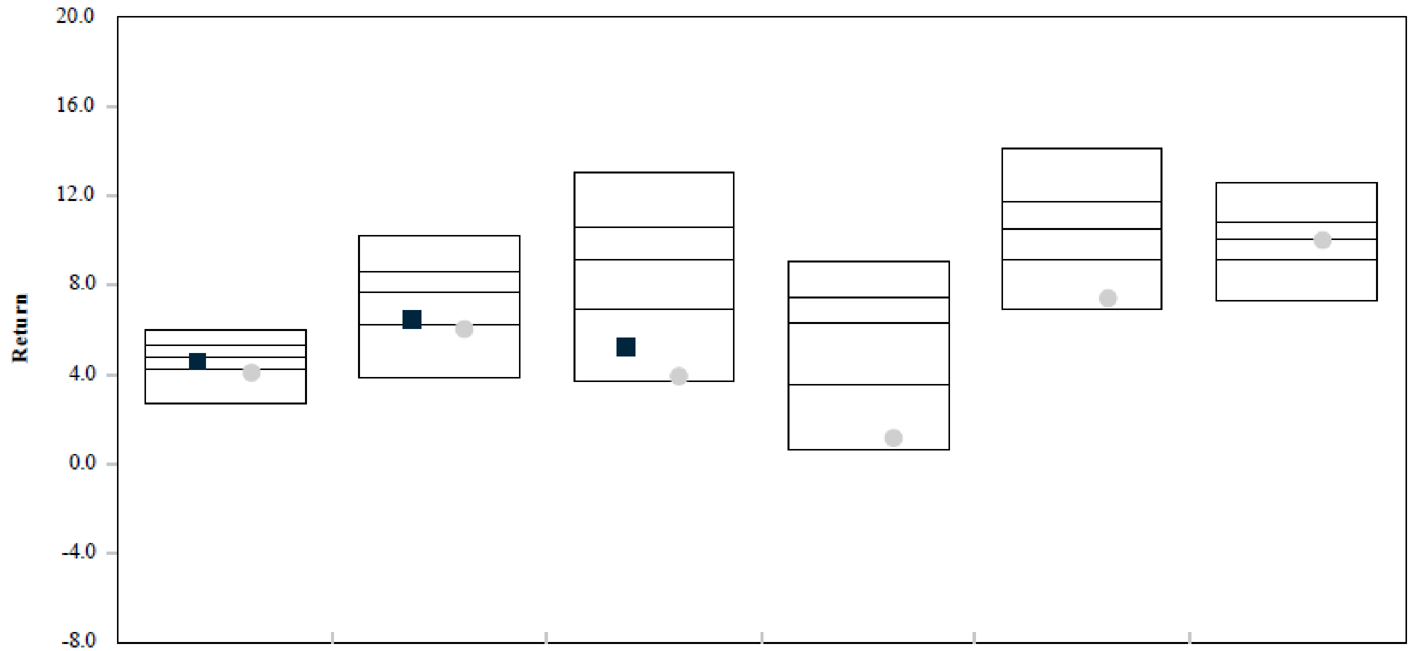


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Core Fixed Income	2.03 (79)	3.81 (87)	4.45 (90)	3.89 (85)	5.32 (92)	5.20 (78)
● Barclays Aggregate Index	2.04 (77)	3.93 (82)	4.37 (91)	3.66 (91)	4.85 (98)	4.93 (92)
5th Percentile	3.70	7.51	9.79	8.27	10.85	8.32
1st Quartile	2.72	5.49	7.55	6.22	8.00	6.35
Median	2.43	4.72	5.79	4.99	7.02	5.54
3rd Quartile	2.10	4.06	4.83	4.30	6.03	5.21
95th Percentile	1.72	3.07	4.15	3.46	4.98	4.25
Population	83	82	79	72	56	35

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 11:

Arizona State Retirement System
IM Emerging Markets Debt (SA+CF+MF)
As of June 30, 2014

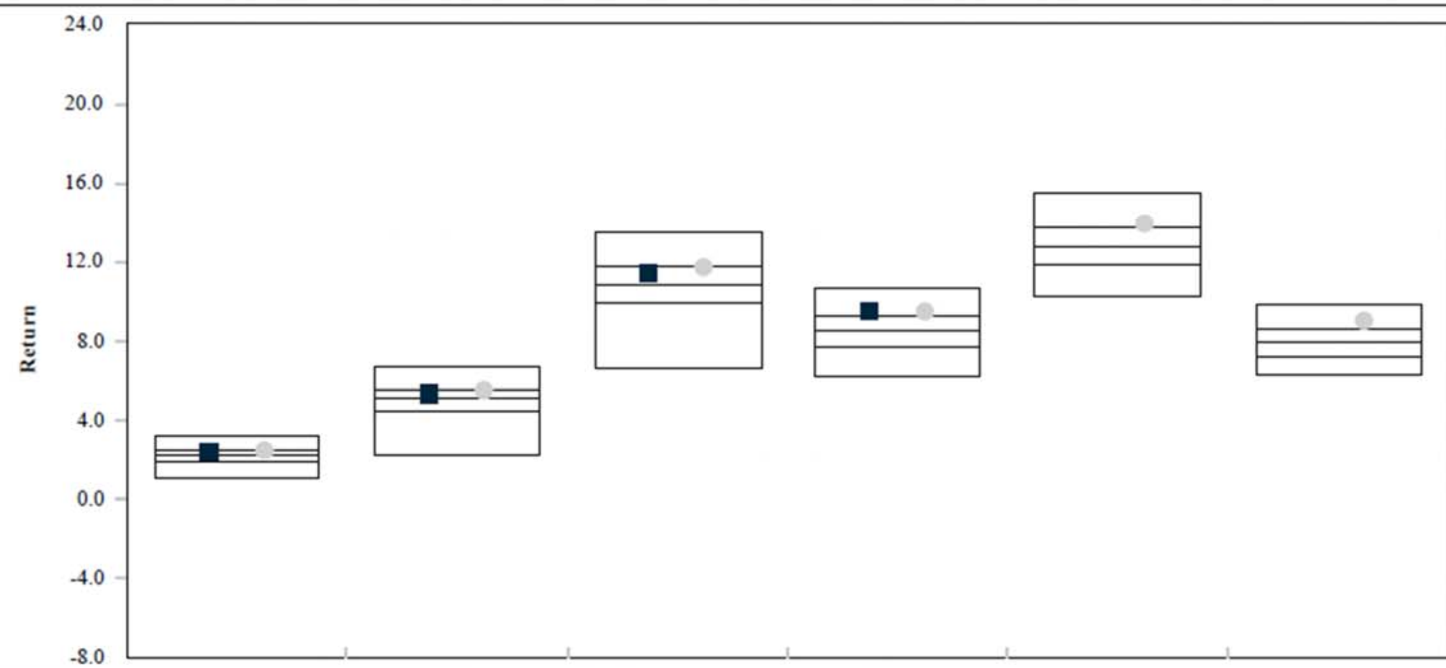


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Emerging Market Debt	4.57 (63)	6.43 (71)	5.22 (88)	N/A	N/A	N/A
● JPM GBI-EM Global Diversified	4.02 (81)	5.99 (79)	3.91 (95)	1.16 (93)	7.42 (92)	10.01 (54)
5th Percentile	6.03	10.24	13.11	9.06	14.11	12.59
1st Quartile	5.33	8.62	10.66	7.47	11.78	10.81
Median	4.76	7.72	9.13	6.30	10.54	10.08
3rd Quartile	4.18	6.22	6.87	3.53	9.21	9.16
95th Percentile	2.73	3.91	3.74	0.62	6.86	7.29
Population	375	367	329	217	152	83

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 12:

Arizona State Retirement System
IM U.S. High Yield Bonds (SA+CF+MF)
As of June 30, 2014

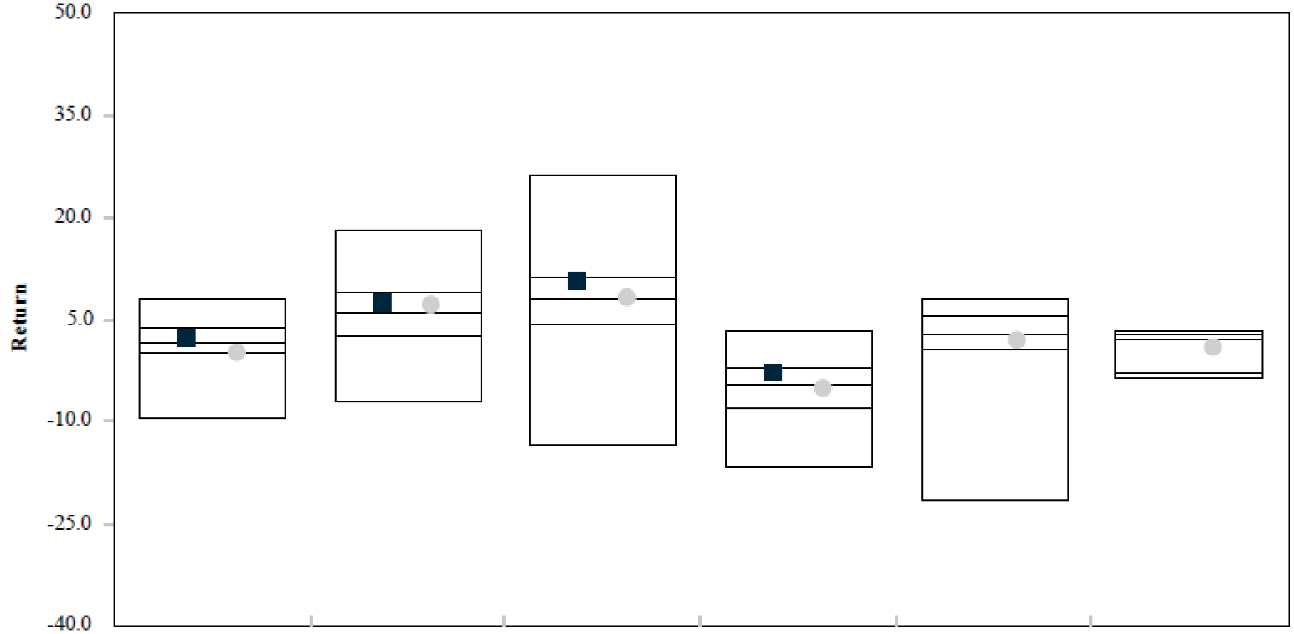


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total High Yield Fixed Income	2.30 (43)	5.33 (37)	11.45 (36)	9.50 (22)	N/A	N/A
● Barclays US High Yield	2.41 (33)	5.46 (31)	11.73 (28)	9.48 (22)	13.98 (21)	9.05 (16)
5th Percentile	3.22	6.67	13.60	10.70	15.57	9.89
1st Quartile	2.51	5.60	11.85	9.34	13.81	8.68
Median	2.20	5.08	10.87	8.54	12.82	7.98
3rd Quartile	1.87	4.48	9.95	7.76	11.92	7.27
95th Percentile	0.99	2.21	6.60	6.24	10.29	6.33
Population	817	805	773	640	549	389

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 13:

Arizona State Retirement System
IM All Commodities (MF)
As of June 30, 2014

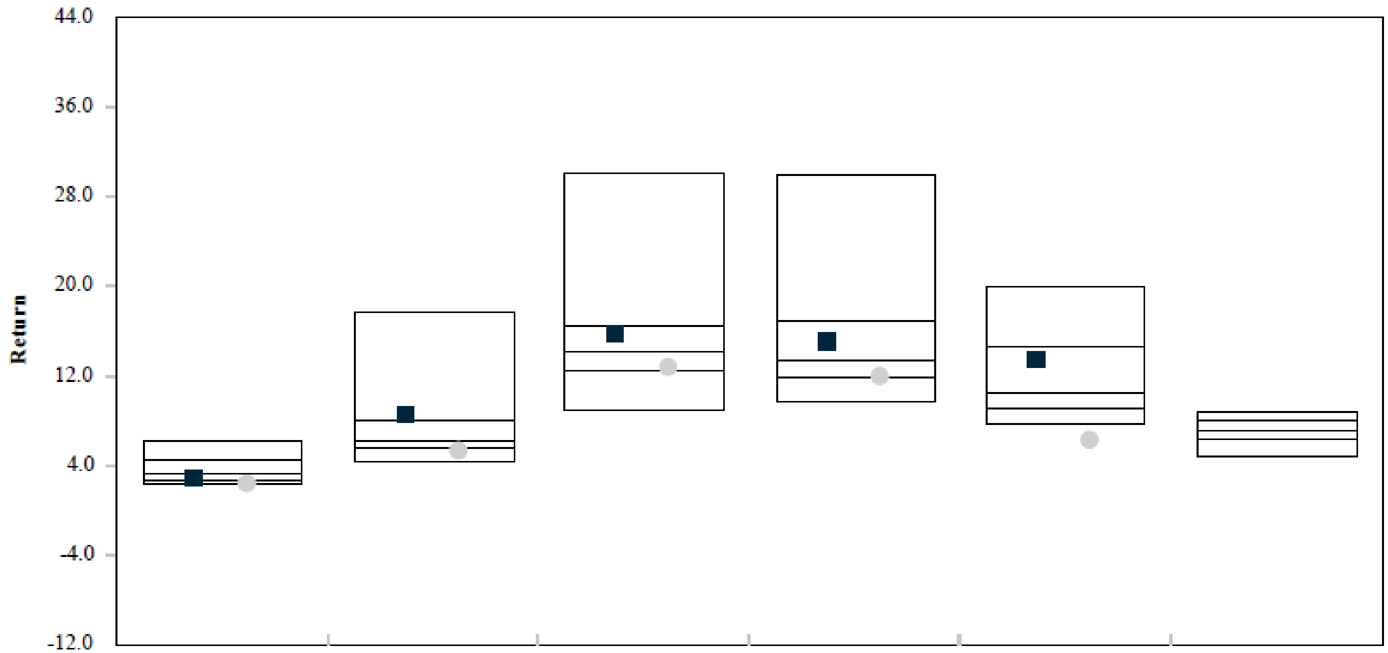


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Commodities	1.99 (43)	7.31 (38)	10.57 (30)	-2.79 (29)	N/A	N/A
● Bloomberg Commodity Index Total Return	0.08 (75)	7.08 (40)	8.21 (47)	-5.17 (54)	1.99 (61)	0.87 (53)
5th Percentile	7.80	18.16	26.16	3.09	7.90	3.28
1st Quartile	3.74	8.96	11.32	-2.07	5.48	2.92
Median	1.53	6.15	7.84	-4.79	2.94	2.13
3rd Quartile	0.01	2.70	4.34	-8.03	0.47	-2.92
95th Percentile	-9.72	-7.09	-13.53	-16.71	-21.79	-3.56
Population	274	267	265	191	108	11

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 14:

Arizona State Retirement System
IM U.S. Private Real Estate (SA+CF)
As of June 30, 2014

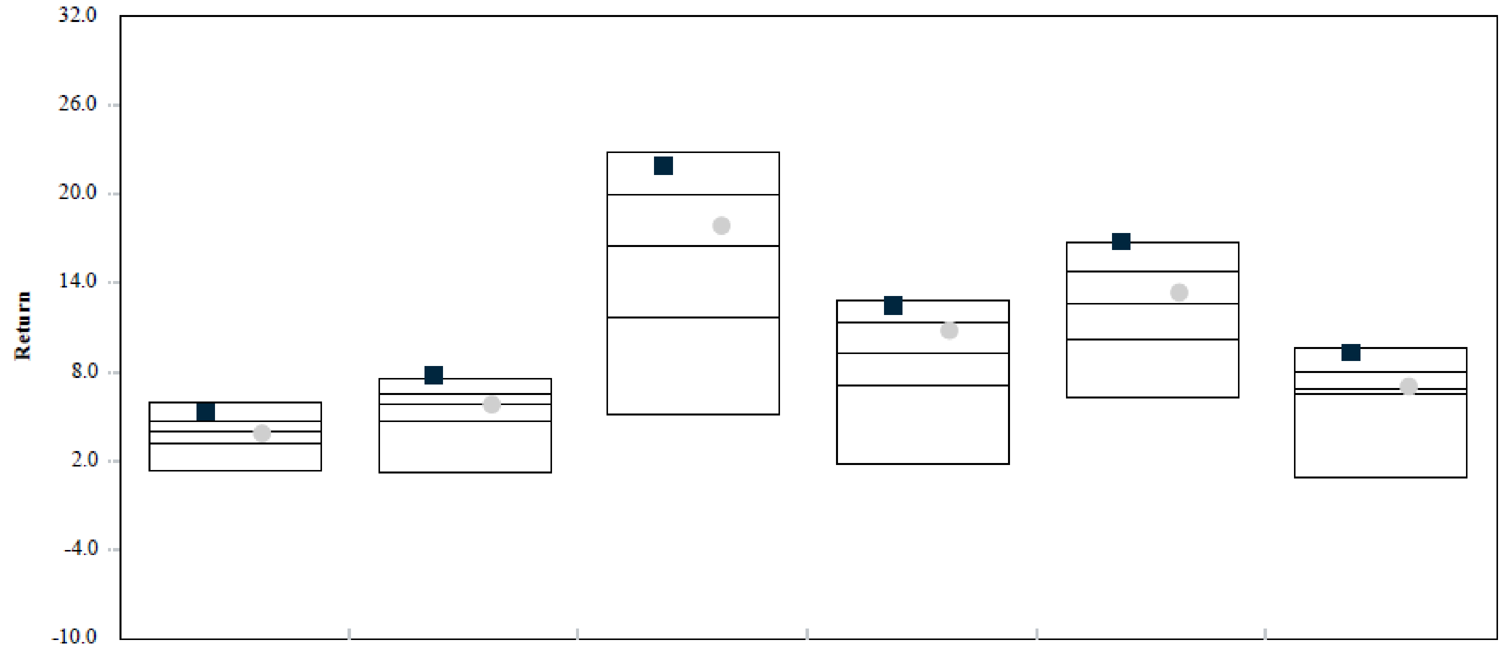


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Real Estate	2.78 (68)	8.48 (23)	15.74 (37)	14.97 (38)	13.38 (29)	N/A
● NCREIF ODCE 1QTR Lagged (net)	2.29 (97)	5.29 (81)	12.74 (70)	11.99 (74)	6.31 (100)	N/A
5th Percentile	6.22	17.69	30.10	30.02	20.03	8.89
1st Quartile	4.52	8.04	16.46	17.04	14.75	8.03
Median	3.25	6.16	14.18	13.47	10.48	7.09
3rd Quartile	2.67	5.56	12.38	11.92	9.11	6.34
95th Percentile	2.31	4.23	8.98	9.58	7.73	4.76
Population	34	34	34	33	31	22

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 15:

Arizona State Retirement System
IM Global Balanced/TAA (SA+CF+MF)
As of June 30, 2014



	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total GTAA	5.32 (10)	7.72 (5)	21.87 (17)	12.42 (11)	16.79 (5)	9.27 (12)
● ASRS Custom GTAA	3.85 (57)	5.70 (57)	17.88 (42)	10.72 (33)	13.34 (42)	6.92 (49)
5th Percentile	6.03	7.57	22.80	12.87	16.72	9.65
1st Quartile	4.60	6.42	20.06	11.38	14.76	8.12
Median	4.07	5.91	16.54	9.26	12.57	6.87
3rd Quartile	3.14	4.68	11.68	7.14	10.15	6.47
95th Percentile	1.30	1.28	5.14	1.88	6.23	0.92
Population	169	168	167	151	126	27

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Appendix 2.c:

Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts

<u>Exhibit 1:</u>

<u>Foley & Lardner LLP</u>

Foley summarizes the key elements of their review process as follows:

- Review of Board meeting minutes to determine the scope of the Board's approval
- Investment Fund Document Review, which may include
  - Offering memoranda (PPM)
  - Limited partnership agreement
  - Subscription documents
  - SEC Form ADV
- Investment Fund Manager Review

In addition to the legal review, Foley will negotiate key terms specifically on behalf of ASRS. Key provisions of the negotiation include:

- Investment Fund Fees and Expenses
- Fiduciary Duty Standard of Investment Manager
- Most Favored Nation
- Clawbacks
- Indemnification
- Disclosure Requirements (consistent with Arizona statutes)
- Record Retention and Reports (consistent with Arizona statutes)
- Gift and Ethics (consistent with Arizona statutes)

Cox, Castle & Nicholson LLP

CCN identified the key criteria in their review of commingled fund offerings as follows:

- Side Letter typically includes:
  - Arizona Statutory Requirements
  - Most Favored Nation
  - Entire Agreement and Binding Effect
  - Financial Statements, Contents of Financial reports and Operational Audit; Management Fee and Partnership Expense Reporting; Cooperation with Consultants
  - Ethics Acknowledgement, Placement Agents and SEC Rule 206(4)-5 (Pay to Play Prohibitions)
  - Notice of Ownership Changes and Key Man Event
  - Representations of the Partnership and the General Partner
  - Investor Transfers
  - Alternative Investment Vehicles
  - Opinions
  - Other Opinions; Foreign Investments
  - Tax Withholding
  - Distributions in Kind
  - Tax Forms
  - Non-U.S. Tax
  - Eleventh Amendment Immunity
  - State of Arizona Look At Clause
  - Co-Investment Opportunities
  - Indemnification, Claims for Indemnification and Insurance
  - Liabilities after Termination
  - Advisory Board and Reporting Requirements
  - U.S. Foreign Corrupt Practices Act
  - AML Laws
  - AML Representations
  - Power of Attorney
  - Exemption from Participation
  - Distribution Notices
  - Fees and Incentive Allocation Transparency; Carried Interest Calculation
  - Indebtedness
  - Voting

Cox, Castle & Nicholson LLP- Continued

    - Venue
    - Notice of Certain Claims
    - Subscription Facility
    - Defaulting Investor
    - Debt Due on Demand
    - Partnership Expenses
    - Change in Investments
    - No Restoration
    - Environmental Liability
    - Transactions with Affiliates
    - Publicity
- Subscription Agreement review typically includes:
    - Acceptance of Subscription
    - Delivery of Information
    - Execution of Documents
    - OFAC Representations
    - IRC Representations
    - ERISA Representations

CCN identified the key criteria in their review of separate accounts as follows:

- Formation
- Investor
- Manager
- Standard of Care
- No Substitute Performance
- Title Holding Subsidiaries
- Major Decisions
- Removal of the Manager
- Acquisition Process
- Financing and Guaranties
- Company Books
- Reports
- Audits

Appendix 2.d:

Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices

Exhibit 1: Best Practices

Sample Best Practices, from fi360's 2013 publication, *Prudent Practices for Investment Stewards (U.S. Edition)*

STEP 1 : ORGANIZE

STEP 2 : FORMALIZE

STEP 3 : IMPLEMENT

STEP 4 : MONITOR

Appendix 3.c:

Compare the ASRS' processes and other controls over setting external investment manager fees to best practices

GFOA Best Practice

Investment Fee Policies for Retirement Systems

Background. Investment management fees can have a major effect on a retirement system's net investment returns. Historically, retirement systems have tried to minimize fees by: 1) using a competitive selection process that makes fee negotiation a key factor in the procurement decision; 2) using low-cost passive index investment strategies; and 3) exploring opportunities for achieving economies of scale. As retirement systems make increasing use of alternative investments such as hedge funds, private equity, and real estate, procedures to identify, quantify, and negotiate all forms of investment manager compensation are needed to minimize the effect these premium-priced investment strategies can have on the retirement system's total returns.

Recommendation. To minimize the impact of investment management fees on portfolio returns, the GFOA recommends that retirement systems, especially those that use alternative investment strategies, adopt an investment management fee policy that will allow the retirement system to negotiate the lowest competitive fee possible while looking out for the system's long-term earning potential.

To achieve this goal, an investment management fee policy should adhere to the following guidelines:

1. Staff and consultants should negotiate the lowest competitive fees using measures and techniques such as:
    - Determining what fees similar investors are paying and making these peer comparisons part of the negotiation process.
    - Including a "most favored nation" clause (ensuring that the type and size of fees are at the level that is being made available to other similar investors) in the agreement.
    - Leveraging the consultant's knowledge of the marketplace to minimize fees for contracted services, keeping in mind that fees are a key component of the competitive procurement process.

2. Give a specific individual or group of employees explicit responsibility for negotiating fees, and require that they report on the status of negotiations before the management agreement is executed. Consult with retirement system trustees to determine their interest in alternate fee structures (e.g., a fixed fee versus a performance fee that may have a higher or lower expected cost, based on performance).

3. Identify where the importance of competitive fees ranks among the multiple factors analyzed when selecting investment managers:
    - The primary factors to consider are demonstrated track records, proven investment talent, repeatable investment processes, competitive and strategic investment advantages, and other qualitative factors.[1]

- o When screening investment managers, make sure fees are reasonable. Future returns are uncertain, while fees can be determined in advance. When one manager's fees are higher than another's, analyze the track record to determine whether the additional cost is necessary and appropriate.
- o Because fees for active management can be dramatically higher than fees for passive management, examine the fees, the investment process, and historical performance of active managers to determine the likelihood that their performance will be better than the index return, after fees.[2]

4. When investing in traditional investments, ensure that the pension system is paying a reasonable, competitive fee by implementing the following strategies:
    - o When using a separate account structure (whereby professional investors manage a portfolio solely for the system), establish fee break points as the manager's mandate grows. [3]
    - o Explore the possibility of excluding uninvested cash from management fees, where possible. If exclusions aren't possible, consider a refunding arrangement.
    - o When investing in commingled and mutual funds (investment vehicles that pool assets of multiple investors), ask the manager to identify and quantify all levels of fees.
        - Any fees that aren't directly related to the management of the portfolio should be considered for elimination.
        - Seek access to the lowest-cost share class and require that any fees related to services provided to retail investors be refunded to the retirement system.
        - Ask the investment manager to consider all the accounts it handles for your organization when determining fees.

5. When investing in alternatives, ensure that the retirement system is not paying excessive fees by implementing the following additional strategies:
    - o Identify all fees. Paying a base fee is usually appropriate, but the fee policy should specify a preference for performance-based fees, where applicable. Focus on aligning the interests of the retirement system and the investment manager through the performance fee structure, potentially including fulcrum fees, hurdle rates, fee caps, and clawback provisions.[4]
    - o The fee policy should state a preference for performance fees that compensate the manager for alpha rather than beta, and it should include a hard hurdle. [5] Alternative investment managers commonly use "carried interest," or participation fees, which are expressed as a percentage of net returns over a specified minimum return.
    - o Rather than entering into direct partnerships with alternative investment managers, investigate the possibility of group purchasing arrangements such as an alternative investment fund of a P-share class.[6] These options allow retirement systems to realize pricing concessions based on their meaningful economies of scale and their long-term investment horizon.
    - o Look for ways to "piggyback" on other institutional investors to maximize economies of scale and increase negotiating leverage.[7] One way of piggybacking is through a cooperative pool, in which an investment manager makes available a separate pool that provides lower pricing, based on the combined assets in the pool. Such "break points" are employed by mutual funds and commingled investment trusts and can be replicated through investment pools established for public pension funds.
    - o Hire an attorney to oversee alternative investment contracts.

Notes.

1 A *repeatable investment processes* is one that is disciplined and consistent in strategy. *Competitive and strategic investment advantages* refer to an advantage that a firm has over its competitors, allowing it to generate greater sales or margins and/or retain more customers than its competition; this can include the firm's cost structure, product offerings, distribution network, and customer support. *Qualitative factors* refer to aspects of a firm's business such as its business model, competitive advantages, management, and corporate governance.

2 In *active management*, an investment manager attempts to earn more than the average market return. In *passive management*, the manager simply attempts to replicate the average market return before fees.

3 *Break point* refers to the investment amount that qualifies the investor for a reduced sales charge.

4 *Performance fees* are paid when an investment manager achieves an investment return that beats a specified benchmark. *Fulcrum fees* are fees that are centered on a target, or "fulcrum," performance level, which are increased or decreased, depending on performance. *Hurdle rates* are the *minimum rate of return* required for payment of performance fees. *Clawbacks* are payments the retirement system has made that the investment manager needs to return because of special circumstances that are included in the contract, such as failure to meet a minimum investment return.

5 *Alpha* refers to the portion of investment returns that is attributable to the manager's performance and skill, while *beta* is a measure of an investment's volatility, or systematic risk, when compared to the market as a whole. A *soft hurdle* calculates the manager's performance fee on all the fund's investment returns, if the hurdle rate is cleared. A *hard hurdle* is calculated only on returns above the hurdle rate. A hurdle is intended to ensure that a manager is rewarded only upon generating investment returns that are greater than what the investor would have earned elsewhere in the market.

6 A *P-share class* is a special pricing structure established by some investment fund companies; it gives retirement systems access to lower fees than those paid by retail investors.

7 Pension funds can also pursue collaborative procurement strategies and other methods of lawfully increasing the pension plan's bargaining and purchasing power. Each of the 50 states has enacted statutes permitting intergovernmental service and procurement arrangements.

Resources.

Orange County Employees Retirement System Fee Policy.

Girard Miller, "Managing Against Escalating Pension Investment Fees," *Government Finance Review*, February 2014.

ARIZONA STATE RETIREMENT SYSTEM

3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000
7660 EAST BROADWAY BOULEVARD • SUITE 108 • TUCSON, AZ 85710-3776 • PHONE (520) 239-3100
TOLL FREE OUTSIDE METRO PHOENIX AND TUCSON 1 (800) 621-3778
EMAIL ADDRESS: ASKMAC@AZASRS.GOV • WEB ADDRESS: WWW. AZASRS.GOV

Paul Matson
Director

August 12, 2015

Mark Melnychuk
Arthur J Gallagher & Co
3600 American Blvd West, Suite 500
Bloomington, MN 55431

Dear Mr. Melnychuk:

Below are the Arizona State Retirement System responses to the recommendations contained in the *Arizona State Retirement System (ASRS) Operational Review* report your firm prepared as a part of the Office of the Auditor General's performance audit and sunset review of the ASRS.

<u>Task 1</u>: Determine the Fund's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance and make recommendations for improving the Fund's investment performance, as appropriate.

<u>Task 1.b</u>: *Compare the ASRS' investment strategies and objectives to best practice, including but not limited to industry standards*

1. Recommendation: The ASRS should continue to maintain and update an investment policy statement (IPS) for the Fund.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented. Per the ASRS Governance Handbook, the ASRS Investment Committee reviews the IPS annually; modifications to the IPS require full Board approval.

2. Recommendation: The assumed actuarial interest rate has not changed over the last ten fiscal years; Gallagher recommends that the ASRS discuss the 8.0% actuarial rate annually with the actuary to ensure that it is appropriate given current asset allocation and projected rates of return. ASRS should maintain a long-term perspective to avoid unwarranted changes to the actuarial rate.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

<u>Task 1.c</u>: *Determine the processes the ASRS uses to monitor how well its investment strategies and objectives are performing and guide it toward meeting its expected rates of return*

1. Recommendation: Gallagher recommends that the ASRS ask NEPC to include consecutive calendar year performance for the most recent ten years in the quarterly IPR.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented. The independent general investment consultant, NEPC, has commenced reporting annual calendar year performance in the ASRS quarterly Investment Performance Report. This information was included in the ASRS Q1-2015 Investment Performance Report.

Task 1.h: *Determine the causes for any underperformance, including any procedures or requirements that limit the ASRS' investment strategies*

1. Recommendation: The ASRS should continue to monitor performance of the Fund and the underlying strategies and adjust its asset allocation and restructure asset classes as appropriate and reasonable.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

Task 2: Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments, identify the reasons for and impact of any inadequate controls and make recommendations for improving controls, as appropriate.

Task 2.a: *Identify the processes and other controls the ASRS uses for selecting, developing terms and conditions for, monitoring, and valuing investments, and terminating alternative investment manager contracts*

1. Recommendation: Gallagher recommends that the ASRS conduct a thorough review and update of the Strategic Investment Policy at least annually (and more frequently if needed). The current version has been in place for more than 2 years.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

2. Recommendation: In order to gain additional confidence in valuations, the ASRS should sample a greater number of partnerships. Sampling should include sufficient partnerships to represent at least 50% of the market value of the total alternative investment portfolio.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

<u>Task 2.b</u>: *Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014*

1. Recommendation: Gallagher recommends including sourcing information and screening criteria in the final investment memo for each partnership. These are active parts of the investment process, and it would be beneficial to document where each opportunity came from and what characteristics drove the team to undertake additional due diligence.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

2. Recommendation: Gallagher recommends that all specialty consultants adopt Meketa's practice of incorporating the due diligence checklist, as presented in Appendix 1 of SIP006, into their recommendations. The checklist provides a tangible record that the due diligence has been performed as prescribed by the consultant, which should give the Private Markets Committee additional confidence in considering the recommendations made by the consultant. Making the checklist a standard practice will also help to ensure consistency across the evaluation of each potential investment.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

3. Recommendation: The ASRS should continue the independent reviews of Asset Class Committee meetings by NEPC. Record NEPC's reviews in a single document for ease of review and monitoring. NEPC's independent verification that the process has been followed for each investment serves as an important check and balance to ensure that every investment has been vetted properly.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

<u>Task 2.c</u>: Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts

1. Recommendation: The ASRS should continue to utilize both firms in the legal review of fund terms and documents, as appropriate.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

2. Recommendation: While both firms' have appeared to serve the ASRS well, a documented, periodic review of each service provider can help ensure that the firms

continue to serve in the best interest of the Plan. We recommend that such a review be conducted at least every three years.

ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and a different method of dealing with the finding will be implemented. The ASRS review will be conducted to coincide with the procurement cycle.

<u>Task 2.d</u>: Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices, including but not limited to industry standards

1. Recommendation: As listed in Section 2.b, Gallagher recommends the inclusion of sourcing and screening information in final due diligence materials on each fund.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

2. Recommendation: A periodic review of all service providers (both investment advisors and legal representation) would help to ensure that the ASRS continues to receive high-quality guidance and advice at a reasonable cost. We recommend that these reviews be conducted at least every three years.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and a different method of dealing with the finding will be implemented. The ASRS review will be conducted to coincide with the procurement cycle.

<u>Task 3</u>: Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate.

<u>Task 3.a</u>: Identify the processes and other controls the ASRS uses for accepting and/or negotiating external investment manager fees

1. Recommendation: The ASRS has a well-considered approach to negotiating investment fees that should be equally well articulated in the documented procedures for selecting investment managers. Gallagher recommends adding an Appendix to SIP006 that explicitly outline the objectives and preferences for fee negotiations.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

<u>Task 3.b</u>: Determine whether the ASRS used the identified processes and controls for accepting and/or negotiating external investment manager fees for contracts the ASRS entered into during fiscal years 2005 through 2014

1. Recommendation: The documented procedures mentioned in Section 3.a should include a standard method for documentation of fee negotiations. The documentation should include, at a minimum, the proposed fees from the manager before negotiation, the ASRS proposed fee structure, the final agreement, and be signed by the person(s) responsible for the negotiation.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

Task 3.c: Compare the ASRS' processes and other controls over setting external investment manager fees to best practices, including but not limited to industry standards

1. Recommendation: The ASRS procedures are well aligned with best practices with the exception of having a dedicated fee negotiation team that must report on all proposed investments before a deal is executed. Gallagher recommends implementing a formal report on fee negotiations to be completed prior to the execution of each investment agreement.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

Task 3.d: Identify the reasons for and impact of any inadequate processes or other controls

1. Recommendation: Gallagher recommends the documentation of fee negotiations should include acknowledgement of where the manager fee ranks compared to an appropriate peer group. Above-median fees should be justified by the perceived ability of the manager to add value over the appropriate benchmark.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented subject to availability of appropriate peer data.

Sincerely,

Paul Matson
Director

cc: Ms. Debbie Davenport, Auditor General